Vol. LXX THE IRON TRADE REVIEW No. 4
Registered U. S. Patent Office
Cleveland, January 26, 1922

Inquiries Involve Larger Tonnage

Actual Buying Lags but Appearance of Larger Projects Is Reassuring—Contemplated Work on Ships, Tanks and Cars Reflects Greater Confidence of Purchasers of Iron and Steel—Export Demand Continues

ENCOURAGING repetition of the appearance of larger projects seems to indicate a more general feeling among buyers that prices of iron and steel have reached a tempting level. Although the sales recorded during the past week are far from being satisfactory, the number of inquiries and the announcement of new projects foreshadow an increased volume of construction work.

For the first time in many months plans are being prepared for the construction of a number of steamships. Whittlesey & Whittlesey, New York, on Saturday took bids for the construction of six passenger vessels for the Tri-National Steamship Co. Several American yards have been asked to submit bids on two 1100-ton combination passenger and cargo vessels for Mexican interests. It is understood that plans for two 11,000-ton passenger boats for service between Tampico and Europe shortly will be issued.

The prices of finished steel still are uncertain. Sales as low as 1.40c have been made on plates, shapes and bars in certain districts, but the bulk of this material is being moved at the usual quotations. The inequalities caused by the freight rate situation are causing many producers to give ground on prices in order to overcome their disadvantage on rates. The tendency toward softer prices in the case of several items lowers THE IRON TRADE REVIEW market composite this week to the level of $33.27, a decrease of nine cents during the week. This compares with $33.54 two weeks ago and $33.64 at the beginning of the year.

New Work Appears

One of the most significant developments during the past week has been the appearance in the eastern structural markets of numerous inquiries for shapes for large dwellings and apartment houses. Structural contracts pending include 1000 tons for a department store, Davenport, Iowa; 1400 tons for a power plant, Lansing, Mich.; 2000 tons for a memorial hospital, Baltimore; from 5000 to 8000 tons for apartment houses in New York; 2000 tons for the Mellon bank, Pittsburgh; and 1000 tons for a New York office building. It is estimated that from 18,000 to 20,000 tons of shapes will be required for building construction in eastern Massachusetts before summer. The requirements for the concourse of the union station, Chicago, mentioned in these columns last week, may approach 20,000 tons. Because of the size of this job and the extended period of delivery, mill operators doubtless will proceed cautiously in booking tonnage.

Need Plates for Tanks

Oil producing and refining interests still are in the market for storage tanks. The Warren City Tank & Boiler Works, Warren, O., the Petroleum Iron Works, Sharon, Pa., the Reeves Bros. Co., Alliance, O., and the Phoenix Iron Works Co., Meadville, Pa., have booked orders for a total of 32 large oil storage tanks, involving upwards of 10,000 tons of plates. While only slightly more than 2000 freight and passenger cars were placed during the past week, orders pending involve almost 20,000 cars, including 10,000 narrow-gage box cars for the National railroads of Mexico.

A growing volume of inquiry for iron for second quarter delivery is a feature of the eastern iron market. Several purchasers have asked for prices on iron for delivery up to June 1. Requirements of foundrymen who expect to bid on segments for the New York-New Jersey vehicular tunnel continue to attract attention. Thus far furnacemen have been reluctant to quote because of the uncertainty of production costs and the extended period over which delivery of iron will be made. Southern iron is showing a stronger tendency, the $15 price apparently having disappeared. Malleable iron is softer in all markets.

Mexico To Buy Tools

The volume of export business is expanding gradually. It is estimated that Japan is buying black sheets from American mills at the rate of approximately 10,000 tons monthly. Last week a Japanese interest purchased 2000 tons of wire rods, and inquiries for 10,000 kegs of nails and 8000 base boxes of tin plate are current. It is understood that Mexico soon will be in the market for machine tools for repair shops, the value of the desired equipment being approximately $360,000. A disturbing influence in the export market is the increase of $2 per ton in rates to the Orient.

THE IRON TRADE REVIEW

Registered U. S. Patent Office

Devoted to the Iron, Steel, Foundry and Metalworking Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., CLEVELAND

Member, Audit Bureau of Circulations and Associated Business Papers, Inc.

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Cable Address, IROTRAPEN, London

Subscription, United States, Cuba and Mexico, $6 per year. Canada $8.50 and other Foreign Countries, $11 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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How Much Steel Do Roads Use?

WHEN Daniel Willard of the Baltimore & Ohio railroad recently stated before the interstate commerce commission that the railroads buy 30 per cent of the steel produced in this country, he probably was entirely unconscious of the extent to which he exaggerated the facts. Mr. Willard's misstatement is simply a repetition of what a good many other individuals have said on numerous occasions. From repetition, in fact, it has been generally accepted that the railroads buy 30 per cent of the steel produced.

It is time that this myth be shattered. At one time the railroads did absorb, directly or indirectly, 30 per cent of all the steel made in this country. It is quite likely this was true in 1906, when 3,977,887 gross tons of rails, the record output, were produced in the United States. But the railroad percentage since then has tended to shrink.

In the Jan. 5, 1922, issue of THE IRON TRADE REVIEW it was stated that normal requirements call for an annual steel production in this country of 33,840,000 net tons, and that of this total, 3,350,000 net tons normally are used in car and locomotive construction and that 2,795,000 net tons go into rails and miscellaneous railroad requirements. Now the railroads and the railroad accessory industries absorb machinery and hand tools and a large tonnage of steel for building, bridge and other construction. It is estimated authoritatively that 13 per cent of the machinery, machine tools and hand tools made in this country go into railroad and railroad accessory shops. Inasmuch as total machinery and hand tool requirements normally are 1,600,000 net tons, 208,000 net tons, or 13 per cent of this total, must be added to the grouping of railroad requirements. Of building requirements, which normally account for 5,100,000 net tons a year, it is estimated in some quarters that 25 per cent goes directly or indirectly into the railroad grouping. On the other hand, some authorities estimate the railroad percentage of the building requirements is not greater than 15 per cent. Certainly they have not even aggregated 15 per cent in late years. However, using both figures for building requirements, it may be assumed that the amount of steel normally used for railroad purposes is not less than 19.86, nor more than 22.47 per cent of the entire normal steel supply of the country. The calculation is shown as follows:

	Net tons
Normal car and locomotive construction requirements	3,350,000
Normal rail and miscellaneous railroad and railroad accessory requirements	2,795,000
Steel in normal machinery, machine tool and hand tool requirements of railroads and railroad accessory shops	208,000
Normal steel construction requirements of railroads and railroad accessory manufacturers	765,000 to 1,275,000
Total normal, direct and indirect railroad requirements	7,118,000 to 7,628,000
Total normal steel production of country, net tons	35,840,000
Percentage of normal steel supply normally used for railroad purposes	19.86 to 22.47

It seems certain that the steel going to the railroads never again will be larger than 20 to 22½ per cent of the total. The pioneering days in railway construction long since have passed and future requirements probably will be restricted largely to replacements. Moreover, the continued and great growth of the country's steel capacity automatically causes the percentage of steel going to the railroads to shrink.

Reclassifying Export Statistics

ONE result of the government's experience in controlling exports through the war trade board during the time of America's participation in the world war, is shown in the reclassified schedules of domestic exports now in effect in the bureau of foreign and domestic commerce.

Steel men and others engaged in the export field were called into the service of the war trade board and their experience in licensing and forbidding shipments of certain products subject to America's

wartime productive and consumptive needs, and those of the allies, largely is responsible for the new groupings. The bureau of planning and statistics, a division of the shipping board representing nearly all of the peace and war time departments of the government, began a study of the classifications with a view to a more comprehensive and illuminative presentation of the export statistics. Opinions of manufacturers, exporters, shipping officials, tariff experts, business paper editors and others were obtained.

How far the new classifications will go toward assisting business in its development of foreign trade remains to be seen. Study of the iron and steel, alloy and machinery groups as published on page 279 in this issue will disclose the scope of the statistics soon to be available. To some it may appear the reclassification has not gone far enough. Others will appreciate the more complete schedule as compared with that which terminated Dec. 31.

Lower Rates and Shipments

IN PRESENTING the case of the iron and steel manufacturers before the interstate commerce commission at Washington, the experts representing the manufacturers made a strong plea for reduced rates. The general conditions for which exorbitant freight charges are responsible are well known. The need for lower rates has been emphasized time and time again and so strong has been the pressure for reductions that on at least one occasion strong hope was current throughout the country the request would be met.

The arguments put forward by the representatives of the iron and steel companies only emphasize the degree of an injustice which already has been widely recognized. Perhaps the railroads cannot be criticised too severely for their reluctance to lower rates. Their hands have been tied rather effectively by the action of the railway labor board and other governing agencies. It certainly is true that wages in the railroad field have not been reduced to anywhere near the extent to which they have been cut in other branches of industry. Moreover, the executives of the roads do not seem to believe that the lowering of freight rates will increase their revenues rather than diminish them. High rates for rail transportation have forced a number of shippers to turn to water haul and other expedients which probably would be discontinued if rates were more nearly normal.

Given an opportunity to cut wages to a point corresponding with those of other classes of workers, the railroads should be able to see their way clear to reduce rates by a considerable margin. The return to equitable transportation charges undoubtedly would be followed by a prompt increase in shipments.

Agricultural Problem Looms

THE economic plight of the farmers has become a national problem. A conference has convened in Washington to seek a solution and in congress the "farm bloc" is energetically groping for some legislative remedy to cure the ills of the agricultural sections. The growth in the power of the farm bloc has projected the farm problem into the center of the political arena.

What is happening now has happened in previous periods of economic depression. The farm bloc and its activities are reminiscent of the "Farmers' Union", the "Farmers' Alliance", "The Ancient Order of the Gleaners", and the "Populists", of earlier days. These and similar organizations were merely passing phases. The present movement, however, has more of the elements of permanency than the others. It is built on the solid foundation of the nationwide organization known as the American Farm Bureau federation, which is well financed and directed by experienced men.

The present troubles of the farmers flow fundamentally from the same causes which have brought distress to every industry in nearly every country of the world. The farmer has seen the prices of his products fall faster than manufactured goods because he is unable to restrict production in the same degree as in the case of industry. As a consequence there is a surplus of farm products in proportion to the volume of industrial goods and the exchange value of the former naturally is depressed. In addition consumption in the industrial nations has been greatly curtailed.

All business would welcome sound measures to lift the farmer into the middle of prosperity. The more radical of the farm leaders would demand government financial aid to guarantee profitable prices. Such a scheme, of course, is unthinkable. Others would make bank credit cheaper and more available for the farmers. Certainly some rational plan should be devised to make this possible. The recent proposed amendment of the federal reserve act to add a dirt farmer to the membership of the federal reserve board, will not accomplish it.

The federal reserve board does not control the loans made by member banks, and the presence of a farmer upon the board would not influence member banks to tie up liquid funds in nonliquid farm mortgages. What the farmers really need is some comprehensive credit plan and a scientific co-operative marketing scheme. Like all other producers the farmer this year should seek to cut production costs and increase efficiency.

Not higher prices for farm products but lower prices for manufactured goods that are out of line, lower industrial labor costs and lower freight rates are the real needs. When normal adjustments are made recovery in the farm districts will go hand in hand with that in the industrial centers.

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products, Yesterday, One Week, One Month, Three Months, One Year and Nine Years Ago

January 25, 1922	January 18, 1922	December, 1921	October, 1921	January, 1921	January, 1913
$33.27	$33.36	$33.99	$35.46	$51.98	$27.96

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Composite Market Record for Nine Years on Page 298

SCRAP PRICES, PAGE 300, WAREHOUSE, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 296

Iron and Steel Prices

Pig Iron

Bessemer, valley	$19.25 to 19.50
Bessemer, Pittsburgh	21.21 to 21.46
Basic, valley	18.25
Basic, Pittsburgh	20.21
Basic, Buffalo	19.00 to 20.00
Basic, delivered, eastern Pa.	20.25
Malleable, valley	19.00 to 19.25
Malleable, Pittsburgh	20.96 to 21.21
Malleable, Chicago	19.00
Malleable, Buffalo, furnace	19.50
Malleable, del., eastern Pa.	22.50 to 23.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	22.25 to 23.00
No. 1X, Buffalo	20.50
No. 2 foundry, valley	19.00 to 19.50
No. 2 foundry, Pittsburgh	20.96 to 21.46
No. 2 foundry, Buffalo	19.50
No. 2 foundry, Chicago	19.00
No. 2 foundry, Ironton furnace	19.50 to 20.00
No. 2 foundry, Cleveland	20.50
No. 2 foundry, del. Philadelphia	20.85 to 21.55
No. 2 foundry, N. J., tidewater	21.55 to 21.95
No. 2X, eastern del. Phil.	21.35 to 22.05
No. 2X, eastern N. J. tidewater	22.05 to 22.45
No. 2X, eastern del. Boston	23.56 to 24.56
No. 2X, foundry, Buffalo fur.	19.50
No. 2X, Buffalo del. Boston	24.46 to 25.46
No. 2 southern, Birmingham	16.00
No. 2 southern, Cincinnati	20.50
No. 2 southern, Chicago	22.56 to 23.16
No. 2 southern, Philadelphia	24.66 to 25.16
No. 2 southern, Cleveland	22.56 to 23.16
No. 2 southern, Boston	23.56 to 24.16
No. 2 southern, St. Louis	21.72 to 22.22
No. 2X, Virginia furnace	21.50 to 22.00
No. 2X, Virginia Phila.	27.24 to 27.74
No. 2X, Virginia Jersey City	27.66 to 28.16
No. 2X, Virginia Boston	28.08 to 28.58
Gray forge, eastern Pa.	20.00 to 20.50
Gray forge, val. del. Pitts.	20.96
Low phos., standard valley	33.50 to 34.00
Low Phos., standard, Phila.	35.32
Low phos., Lebanon furnace	28.00
Charcoal, Birmingham	35.00
Charcoal, Superior, Chicago	31.50
Silvery Iron	
8 per cent base	
Jackson county, O., furnace	29.50
Tennessee, Chicago delivery	Nominal
Ohio brands, Chicago	34.82
Bessemer Ferrosilicon	
Jackson County, Ohio, furnace	
10 per cent	$38.50
11 per cent	41.80
12 per cent	45.10
13 per cent	49.10
14 per cent	54.10

Ferro-Alloys

Ferromanganese, domestic 80 per cent, Pittsburgh	$62.00 to 63.67
Ferromanganese, 80 per cent, English, c.i.f. Atlantic port	58.35
Spiegel, 18 to 22 per cent furnace spot	26.00
Ferrosilicon, 50 per cent, contract delivered	54.50 to 60.00
Ferrotungsten, standard, per pound contained	35.00 to 40.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, per pound contained, makers plant	14.00c to 15.00c
Imported ferrochrome, 6 to 8 per cent carbon	10.00c to 12.00c
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.75 to $3.95
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Coke

Beehive, Ovens	
Connellsville furnace	$2.75 to 3.00
Connellsville foundry	3.50 to 4.25
Pocahontas furnace	5.50 to 6.50
Pocahontas foundry	6.50 to 7.50
New River furnace	6.50 to 7.50
New River foundry	8.00 to 8.50
Wise county furnace	4.50 to 4.75
Wise county foundry	5.50 to 5.75
Alabama furnace	4.50 to 4.75
Alabama foundry	5.00 to 5.25
Alabama pitch coke	8.00 to 8.50
By-Product	
Foundry, Newark, N. J., delivered	$8.59
Foundry, Chicago, ovens	11.25
Foundry, Boston, delivered	10.40
Foundry, Granite City, Ill., ovens	9.50

Semifinished Material

BILLETS AND BLOOMS (4 x 4-inch)	
Open-hearth, Pittsburgh	$28.00 to 30.00
Open-hearth, Youngstown	28.00 to 30.00
Open-hearth, Philadelphia	33.74
Bessemer, Pittsburgh	28.00 to 30.00
Bessemer, Youngstown	28.00 to 30.00
Forging, Philadelphia	37.74
Forging, Pittsburgh	32.00 to 35.00
SHEET BARS	
Open-hearth, Pittsburgh	$29.00 to 30.00
Openhearth, Youngstown	29.00 to 30.00
Bessemer, Pittsburgh	29.00 to 30.00
Bessemer, Youngstown	29.00 to 30.00
SLABS	
Pittsburgh and Youngstown	$28.00 to 29.00
WIRE RODS AND SKELP	
Wire rods, Pittsburgh	$36.00 to 38.00
Grooved skelp, Pittsburgh	1.50c to 1.60c
Universal skelp, Pittsburgh	1.50c to 1.60c
Sheared skelp, Pittsburgh	1.50c to 1.60c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	1.45c to 1.50c
Structural shapes, Philadelphia	1.76c to 1.86c
Structural shapes, New York	1.78c to 1.88c
Structural shapes, Chicago	1.60c to 1.75c
Tank plates, Pittsburgh	1.50c
Tank plates, Philadelphia	1.76c to 1.86c
Tank plates, New York	1.78c to 1.88c
Tank plates, Chicago	1.60c to 1.75c
Bars, soft steel, Pittsburgh	1.50c
Bars, soft steel, Philadelphia	1.81c to 1.86c
Bars, soft steel New York	1.83c to 1.88c
Bars, soft steel, Chicago	1.60c to 1.75c
Bars, hard steel, Chicago	1.50c
Reinforcing bars, Pittsburgh	1.45c to 1.50c
Bar iron, common, del. Pitts.	2.03c to 2.20c
Bar iron, common, Philadelphia	1.81c to 1.86c
Bar iron, common, New York	1.83c to 1.88c
Bar iron, common, Chicago	1.60c to 1.65c

Hoops, Bands, Shafting

Hoops, Pittsburgh	1.90c to 2.00c
Bands, Pittsburgh	1.75c to 2.00c
Cold finished steel bars, Pittsburgh base	2.00c to 2.15c

Rails, Track Material

Standard bessemer rails, mill	$40.00
Standard open-hearth rails, mill	40.00
Relaying rails, St. Louis	25.00 to 35.00
Relaying rails, Pittsburgh	26.00 to 30.00
Light rails, 25 to 45, mill	1.50c to 1.55c
Angle bars, Chicago base	2.45c
Spikes, railroad, Pittsburgh	2.20c to 2.35c
Spikes, railroad, Chicago	2.58c to 2.68c
Track bolts, Pittsburgh	3.00c to 3.25c
Track bolts, Chicago	3.58c to 3.68c
Tie plates, Pittsburgh	2.00c to 2.25c
Tie plates, Chicago	1.90c to 2.25c

Wire Products

100 lbs. to Jobbers in Carloads

Wire nails, Pittsburgh	2.50c
Plain wire, Pittsburgh	2.25c
Galvanized wire, Pittsburgh	2.75c
Barbed wire, painted, Pitts.	2.65c
Barbed wire, galv., Pittsburgh	3.15c
Polished staples, Pittsburgh	2.65c
Galvanized staples, Pittsburgh	3.15c
Coated nails, per count keg, Pitts.	2.00c

Chain, Piling, Strip Steel

Chain, 1 in. proof coil, Pitts.	5.50c
Sheet piling base, Pittsburgh	1.55c to 1.60c
Hot rolled strip steel, Pittsburgh stamping quality	2.00c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base	3.50c

Sheets

SHEET MILL BLACK	
No. 28, open-hearth, Pittsburgh	3.00c
No. 28, bessemer, Pittsburgh	3.00c
No. 28, open-hearth, Phil.	3.36c
No. 28, open-hearth, Chicago	3.38c
TIN MILL BLACK	
No. 28, open-hearth, Pittsburgh	3.00c
No. 28, open-hearth, Chicago	3.13c to 3.38c
GALVANIZED	
No. 28, open-hearth, Pittsburgh	4.00c
No. 28, bessemer, Pittsburgh	4.00c
No. 28, open-hearth, Phila.	4.36c
No. 28, open-hearth, Chicago	4.38c
BLUE ANNEALED	
No. 10, open-hearth, Pittsburgh	2.25c
No. 10, bessemer, Pittsburgh	2.25c
No. 10, open-hearth, Phil.	2.61c
No. 10, open-hearth, Chicago	2.60c to 2.85c

Tin Plate

Per 100 lb. box.

Tin plate, coke base, Pitts.	$4.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	71	58½
1 to 1½-inch, butt iron	44½	29½

Boiler Tubes

Carload Discount 4 Points Larger

Steel, 3¼ to 13 inches, l. c. l.	53 off
Charcoal iron, 3½ to 4½ inches, l. c. l.	28 off

Cast Iron Water Pipe

Without War Freight Tax
Class B Pipe

Four-inch, Chicago	$44.60 to 46.60
Six-inch and over, Chicago	40.60 to 42.60
Four-inch, New York	50.30
Six-inch and over, New York	47.30 to 48.30
Four-inch, Birmingham	38.00
Six-inch and over, Birmingham	35.00
Three-inch, Birmingham	45.00
Four-inch, New York	50.30

Class A pipe is $4 higher than Class B.
Standard fittings, Birmingham, base, $100.00
6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus ; 3-inch, plus $20; gas pipe fittings, $5 higher.

Prices Present and Past

Representative market figures yesterday, one month ago, three months ago and one year ago

	Jan. 25, 1922	Dec. 1921	Oct. 1921	Jan. 1921
PIG IRON				
Bessemer, valley, del., Pittsburgh	$21.46	$21.96	$22.06	$33.96
Basic, valley, del., Pittsburgh	20.21	20.61	21.16	31.29
No. 2 foundry, del. Pitts	21.46	22.26	22.96	32.86
No. 2 foundry, Chicago	19.00	20.00	21.50	32.75
Lake Superior charcoal, Chicago	31.50	31.50	32.50	40.25
Malleable, valley	19.25	20.00	20.25	32.00
Malleable, Chicago	19.00	20.00	21.50	32.75
*Southern No. 2, Birmingham	16.00	17.15	19.00	33.00
*Southern Ohio, No. 2 Ironton	19.50	20.00	21.00	34.60
Basic eastern del, eastern Pa.	20.25	20.80	20.50	33.35
**No. 2X, Virginia furnace	21.50	22.50	23.25	34.50
**No. 2X, eastern del. Phil.	21.75	22.00	22.00	35.00
Gray forge val. del. Pittsburgh	20.96	21.56	21.96	31.96
Ferromanganese, del., Pittsburgh	62.00	60.00	61.65	101.00
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pittsburgh	30.00	30.00	31.50	47.00
Sheet bars, open-hearth, Pitts	30.00	30.00	31.50	47.00
Billets, bessemer, Pittsburgh	29.00	29.00	30.00	43.50
Billets, open-hearth, Pittsburgh	29.00	29.00	30.00	43.50
FINISHED MATERIAL—				
Steel bars, Pittsburgh	1.45	1.50	1.60	2.35
Steel bars, Chicago	1.60	1.60	1.75	2.73
Steel bars, Philadelphia	1.81	1.85	1.95	2.70

	Jan. 25, 1922	Dec. 1921	Oct. 1921	Jan. 1921
FINISHED MATERIAL Continued				
Iron bars, Philadelphia	$1.81	$1.85	$1.95	$3.20
Iron bars, Chicago mill	1.60	1.65	1.75	2.75
Beams, Pittsburgh	1.50	1.50	1.60	2.45
Beams, Philadelphia	1.81	1.85	1.95	2.80
Beams, Chicago	1.60	1.65	1.75	2.83
Tank plates, Pittsburgh	1.50	1.50	1.60	2.65
Tank plates, Chicago	1.60	1.60	1.75	3.03
Tank plates, Philadelphia	1.81	1.85	1.95	3.00
Sheets, blk., No. 28, Pittsburgh	3.00	2.95	3.00	4.35
Sheets, blue anl., No. 10, Pitts	2.25	2.25	2.50	3.55
Sheets, galv., No. 28, Pittsburgh	4.00	3.95	4.00	5.70
Wire nails, Pittsburgh	2.50	2.75	2.90	3.25
COKE—				
Connellsville furnace, ovens	2.75	2.80	3.25	5.15
Connellsville foundry, ovens	3.75	4.00	4.50	6.50
OLD MATERIAL—				
Heavy melting steel, Pittsburgh	14.50	14.25	14.00	15.00
Heavy melting steel, eastern Pa.	11.75	11.90	12.25	15.00
Heavy melting steel, Chicago	11.25	11.35	12.55	15.25
No. 1 wrought, eastern Pa.	15.50	15.75	15.85	20.50
No. 1 wrought, Chicago	11.75	12.10	14.65	15.65
Rerolling rails, Chicago	12.50	12.90	14.00	15.80

*1.75 to 2.25 silicon **2.25 to 2.75 silicon

Pig Iron Market Is Still Drifting

Growing Inquiry for Second Quarter an Outstanding Feature in Eastern Market—Demands for New York Vehicular Tunnel Continue To Hold Interest—$15 Price on Southern Iron Disappears—Malleable Softer

Chicago, Jan. 24.—Lack of interest in pig iron continues in this market, melters taking only carloads or small tonnages for prompt shipment. An increased melt by foundries is believed to be beyond expectations, as car and automobile industries defer full buying.

Melters avoid shipping more iron than current needs, partly because of high freight rates. The present hearings in Washington and the uncertainty complicate the situation. Chicago furnaces are quoting $19, furnace, and generally nothing higher. A test is lacking to bring out a lower figure, though the opinion is held that a round tonnage would obtain a concession under this price.

There is no tempation in the present market to go under $19. Shipments by Chicago furnaces are less than production, and some piling continues. While several stacks are ready to blow in, there are no definite plans to add to production.

Some iron foundries which closed since the holidays will resume next week on an accumulation of orders. Pig iron shipments are expected to reflect this activity. Silveries and other special irons are in no demand, and prices are nominal.

Week's Record Small

Philadelphia, Jan. 24.—Pig iron buying in this district during the past week was the smallest recorded for some time. The largest buyer was a radiator interest which bought 1200 tons for its Trenton, N. J., plant. It is understood that a fair tonnage also has been placed by the Johnstown Radiator Co. Otherwise the week's business was limited to lots of a few hundred tons and less. However, new inquiry is better and includes one lot of 1000 and another of 2000 tons of foundry iron, and also a number of smaller lots. Numerous other requirements are in sight.

Eastern Pennsylvania furnaces are adhering to $20 furnace, as the minimum for No. 2 plain (1.75 to 2.25 silicocn), $20.50 for No. 2X (2.25 to 2.75 silicon), and $21 to $21.50 for No. 1X (silicon 2.75 and up). The only exceptions are where furnaces equalize the freight rate disadvantages. On the other hand, in one case, a furnace which recently swelled its order book considerably, now is quoting higher than $20, base, on some new inquiries. An Eastern platemaker bought 1000 tons of basic iron. The gray forge market now is quoted at $20 to $20.50, delivered, eastern Pennsylvania. Malleable iron can be had at $21.50 eastern Pennsylvania furnace. The low phosphorus market is featureless and is unchanged.

Periodical Efforts Made

Pittsburgh, Jan. 24.—Buyers of pig iron in this market continue to maintain their present policy of making

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periodical entrances into the market for their iron supplies. The Allegheny Steel Co., for instance, purchased 1000 tons late last week from the same source from which it recently obtained 500 tons. This tonnage likewise carried a figure of $18 valley, but since it was resale iron and the price was made for liquidation purposes, the quotable market remains unchanged at $18.25 valley. Merchant producers have shown no inclination to meet such competition and one or two valley steelmakers were extended the opportunity to meet the $18 price but refused to do so. A West Virginia furnace continues to furnish the weekly requirements of the Follansbee Bros. Co. which buys in lots of 1000 tons, a low freight rate making possible a higher furnace price than valley producers now can obtain. Some steelworks in the valley showed a decided inclination not to quote below $18.25 valley, which gives some slight promise of becoming the market level after the cheap iron now available all has been utilized. Another lot of 1000 tons of bessemer recently has been sold to an Ohio user, an active purchaser of that grade, and the price involved was $19.50 valley. Since some small lots have been and are being disposed of at $19.25 by merchant producers meeting resale iron competition, the quotable range remains unchanged at $19.25 to $19.50 valley. One of the lots sold at $19.25 involved 200 tons while several small tonnages went at the same figure. In connection with foundry iron, new inquiries range from 50 to 500 tons but these are not numerous. Prices quoted run from $19 to $19.50 valley, although around $18.50 valley is the figure involved in the 3000-ton purchase by the Oil Well Supply Co. This latter tonnage however is more nearly a No. 3 iron. Casting makers still are figuring on the comparatively large pig iron requirements involved in the New York vehicular tunnel job, which may reach the closing stage within the next few weeks. Developments are being watched with interest since it is thought that high freight rates will cause the business to be placed in the East. An electric company recently inquired for a few carloads of malleable iron and on this grade $19 to $19.25 are the prices being named. Gray forge remains unchanged at $19 and so far as reported, the Altoona, Pa., customer recently asking for 250 to 500 tons, has not closed. Only an occasional carload is involved in copper-free low phosphorus iron negotiations, and the tone of the market appears to be $33.50 valley.

Sales Light in Cleveland

Cleveland, Jan. 24.—Sales of pig iron in northern Ohio totaled a relatively small tonnage during the past week. Several 500-ton lots of No. 2 foundry were sold at $20.50, Cleveland furnace. Other sales involved amounts of from one to three carloads each. Shipments during the week indicate that in most cases the total for the month of January will be about equal to, or slightly in excess of those of December. One company, however, announces that its shipments for the first month of the year will closely approach those of October. About 100 tons of southern iron was sold recently in the Cleveland territory on the basis of $16, Birmingham, this being one of the few sales of this iron in this district in the past two years. The Hanna furnace at Detroit which was reported last week as having suffered a blowout, will have to be shut down and partially dismantled. Local producers have received a number of inquiries for prices on pig iron to be used in making segments for the New York-New Jersey tunnel. Furnace men have been reluctant to quote on this business because of the uncertainty regarding production costs. Most of the inquiries have come from eastern foundries and ironmakers hesitate to commit themselves on orders which logically should be taken by eastern pig iron producers.

Boston Market Irregular

Boston, Jan. 24.—Meager sales of pig iron during the past week have made it difficult to determine the price tendency in this market. Buffalo iron is being offered at a base price of $18.50, furnace, or $23.96 delivered, yet one sale of two cars of Buffalo iron was made to a Massachusetts consumer during the week at $19, furnace, or $24.46, delivered, for No. 2X iron. In eastern Pennsylvania no further cuts have been noted below $19.25, reported a week ago in a sale to a central Massachusetts consumer. The eastern Pennsylvania market for carload or 100-ton lots is still close to $20. Softening is confined to higher silicon grades where differentials are again being ignored, after the attempt two weeks ago to establish 50 cents for each 50 silicon points as standard. One furnace which takes the eastern Pennsylvania rate of $4.06 to New England is reported to have been offering iron at $18.90, furnace, although there is no confirmation of any sale at this figure. It is understood this offer is for the purpose of introducing a new brand of iron. Sales during the week have been few and limited to small tonnages. A Rhode Island consumer took 100 tons of malleable of special analysis at $20, Buffalo furnace, or $25.46, delivered. Another Rhode Island consumer took two cars of special iron. A Massachusetts consumer bought 100 tons of No. 2X eastern Pennsylvania iron (silicon 2.25 to 2.75) at $20, furnace, or $24.06, delivered. Scattered consumers in New Hampshire, Massachusetts and Connecticut took small lots, the largest being 200 tons. Market observers differ as to the significance of the present lull. Some look for firmer prices and others for additional declines.

Interest in Tunnel Segments

New York, Jan. 24.—Interest in the eastern pig iron market centers in the requirements in connection with the New York-New Jersey vehicular tunnel. About 115,000 tons of segment castings will be required for this work and a large percentage of the segment tonnage will be pig iron. Due to the the fact that deliveries of the iron would be wanted over an extended period, furnaces are somewhat uncertain as to what quotation to name to the foundries which are bidding on the segments. The furnaces, of course, would prefer to quote on the basis of the market price at the time of shipment, but such a quotation would be useless to the prospective contractors in making up their bids. Two methods of quoting are regarded as practicable. One is to quote a price based on present market conditions, with an agreement that the foundry is to take in the iron over a comparatively short period and store it until it is needed. Another is to quote on the basis of probable costs over the next year. A third alternative for the foundries bidding on the segments is to insure themselves against their requirements by taking up pig iron warrants.

Pig iron business in this district continues of small proportions in the aggregate but tend to increase. Sales of the past week in this district were limited to foundry iron and do not appear to have exceeded 2000 tons. Inquiries now before the trade are much more numerous than in some time and include a few sizable lots. One for nearby shipment is for 1000 tons for a Massachusetts consumer and another is for 800 tons for a New York state foundry. An outstanding feature of the market is the growing inquiry for second quarter. One melter bought 400 tons of foundry for the second quarter and now is in the market for 200 to 300 tons more for that period. Another melter bought 400 tons for shipment prior to June 1. Another is inquiring for 600 tons for second quarter. The second quarter iron is wanted for specific work. The navy department is inquiring for 2000 tons of iron to be shipped aboard as ballast.

The market generally continues firm. The eastern Pennsylvania makers continue to quote $20, furnace, for 1.75 to 2.25 silicon iron, $20.50 for 2.25 to 2.75, and $21 to $21.50 for 2.75 to 3.25 silicon. The only exception to this level is in cases where a furnace, in meeting competition, finds it necessary to compensate for a higher freight rate by cutting its furnace price. On Buffalo foundry iron the minimum seems to be $19, furnace. On an inquiry for malleable for a Connecticut melter $19 Buffalo has been quoted.

Foundries Asking For Figures

Buffalo, Jan. 24.—One furnace interest here has sold 1000 tons of pig iron and has 17 inquiries for a total of 2500 tons. Another furnace reports miscellaneous sales of 3000 to 4000 tons. Foundries are asking for figures on iron for delivery six to 12 months ahead but the makers are not quoting. This is business for the New York vehicular tunnel, and the general sentiment is that it will go to some producer who has on hand considerable iron of 1.50 to 2.00 per cent silicon and who will sell at a low price. One furnace was asked to figure on 25,000 to 30,000 tons. Prices are softer this week and No. 2 plain is being freely quoted at $19.50, while No. 2X is occasionally quoted at this figure. An inquiry for 200 tons of malleable is current. While some producers will quote $19.50 another would hold out for $21 on the ground that it has only sufficient ore on hand for about two weeks' operation.

Furnace operation is about 36 per cent.

Southern Iron Strengthens

Cincinnati, Jan. 24.—Recent sales in this market indicate that southern iron is stronger and $16, Birmingham base, is being quoted generally. The $15 price appears to have been withdrawn entirely and while it is said

some furnaces are quoting $15.50 so far as is known there have been no actual sales recorded and buyers of small tonnage lots have been unable to purchase at that figure. On the other hand late sales of 100 and 200 ton lots have been reported at $16. Northern iron is firm and quotable at $20, Ironton base. The American Car & Foundry Co. has just placed an order here for 250 tons of southern Ohio iron for prompt delivery to Huntington, W. Va., and the National Cash Register Co. has bought 100 tons of the 500 tons on which it inquired a short time ago. Both of these transactions were done on a basis of $20, Ironton. The past week's volume of business has been decidedly limited with curtailed spot purchases and practically no new inquiries. Those that have been reported almost without exception are still pending. The Williamson Heating Co., which has been in the market for 1000 tons of southern foundry iron has not closed and is said to be holding out in the hope of having quotations revised down to a $15 base.

St. Louis Market Quiet

St. Louis, Jan. 23.—Demand for pig iron is quiet. Sales in the week aggregated less than 500 tons, and were mainly for prompt shipment to foundry interests in the St. Louis district. One Texas melter purchased 150 tons of high silicon iron for delivery in the first quarter, and several carloads of ferroallys were sold. The trend of prices continues lower, but recent concessions have failed to stimulate buying. The base on Southern No. 2 foundry has receded to $15.50, and sales of small tonnages have been made at $15.20. In the Kansas City district southern iron is coming into competition with the Chicago product. It is reported that makers in Chicago have instructed their representatives to meet all competition from the South, which when differentials are considered would mean a reduction under the advertised base on the Chicago product. Northern iron is freely offered here at $19, the $19.50 price having disappeared. Deferred buying is due primarily to a lack of new business for the melters but uncertainty relative to future prices is also an important factor.

Pipemakers Buying in South

Birmingham, Ala., Jan. 24.—Pig iron sales in the South are being made on a basis of $16 per ton for No. 2 foundry, (1.75 to 2.25 silicon). Buying is restricted to local consumers who purchase for a few weeks' consumption. Makers of soil and pressure pipe and radiators have bought about 25,000 tons this month. Some furnace interests are holding iron at $16.50 per ton. There is a buoyant feeling in the market and sales of larger proportions are expected soon. There has been a little accumulation again and stocks on hand Feb. 1 will be larger than on Jan. 1. Stove producers in this state report a slight improvement in business. The King Stove & Range Co., Sheffield, shipped a carload of stoves to Tampa, Fla. in the past week. Soil-pipe making is steadily increasing and radiator demand continues strong.

Coke Booked for Export

South American Metal Company Takes Additional Tonnage—Furnace Inquiring for 4000 to 6000 Tons—Lower Prices Expected

COKE PRICES, PAGE 240

Pittsburgh, Jan. 24.—Conditions in the beehive coke market continue unchanged. Occasionally a tonnage of the 48-hour fuel is sold for other than blast furnace use. Another cargo of 2200 tons has been booked for shipment to a South American metal company by the producer which since the first of the year has been particularly active in that field. One new inquiry for furnace coke involved 4000 to 6000 tons for shipment before March 15. This is thought to be for an eastern blast furnace. Other small lots are being sold regularly for nonmetallurgical purposes for $2.75 to $3, and while some producers state they are not interested in furnace coke business below $3.25, lower prices than $2.75 are expected by buyers to develop, contingent upon further wage reductions in the Connellsville regions prior to or about April 1. Heating coke is stronger with prices of $2.60 to $2.75 prevailing instead of $2.50 and $2.60 available a week or 10 days ago. Foundry coke for which there has been a little more inquiry is quoted all the way from $3.50 to $4.25 with the bulk of the tonnage moving at $3.75 or $4. A number of users made arrangements last December with certain producers for monthly requirements at prevailing market levels instead of contracting ahead for six months' supply. These now are out for February needs but it means no increase in the aggregate of business. One shipper recently circularized its foundry coke trade and developed more inquiries resulting in orders for small lots of one to five carloads each than did any such effort during the past year. Production according to the *Connellsville Courier* for the week ended Jan. 14, increased to 88,910 tons from 81,130 tons.

Plant Operation Declines

Boston, Jan. 24.—Shipping instructions for by-product coke from New England foundries have dropped so low during the last few days as to cause the by-product companies to curtail production. Normal foundry requirements are practically covered by contract, but deliveries against these are not holding up as well as expected. Spot sales constitute practically the only current trading. The established price of $10.40, delivered, for by-product coke apparently is being well maintained. Connellsville coke, however, has been coming into New England at concessions below this price. At least two Connecticut consumers bought coke at a $4.00 Connellsville base during the past week. No immediate improvement in buying is looked for in this market.

Business Restricted to Foundries

New York, Jan. 24.—Business in foundry coke here has fallen off considerably and is restricted almost entirely to carload sales of foundry coke for spot shipment. Prices are practically unchanged. Standard beehive foundry coke of hand-drawn quality usually can be had at $4 to $4.25, Connellsville, and special brands at $4.50, $4.75, and occasionally, $5. Machine-drawn foundry coke can be had at $3.75, Connellsville. The northern New Jersey by-product coke maker continues to quote $8.59, delivered, at Newark, and other northern New Jersey consuming points.

Only Spot Requirements Filled

Philadelphia, Jan. 24.—Coke business here is comprised almost entirely of spot tonnages. Foundry coke prices range from $3.75 to $4.25 for standard fuel, depending on the brand, while in some instances more is being paid for special brands.

Inquire for Small Tonnage

Buffalo, Jan. 24.—Inquiries are in the market for about 1000 tons of coke. Sales of foundry coke in the week total 400 tons, at $4.25.

Coke Market Unchanged

Cincinnati, Jan. 23.—A few foundry coke consumers continue to take from one to three car loads occasionally, still buying, as they have for several months only in such quantities as are needed for current requirements. There has been a noticeable increase in heating coke consumption during the past week, calling for a larger movement than at any time for several months, but on the whole the market is inactive. Blast furnace business practically is at a standstill and there are no inquiries before the trade here of a character indicating an early increase in consumption.

6000 Tons Sold

St. Louis, Jan. 23.—Users of metallurgical coke are not making their wants known, and the market continues dull. The few orders appearing are for car lots, and for immediate shipment. Contracting for later in the year is almost entirely absent. Prices remain unchanged, Connellsville 72-hour foundry ranging from $3.75 to $4.25 ovens, and the furnace product about $1 lower. Local by-product makers report that while there is a dearth of new orders, a marked improvement is noted in shipping specifications on industrial grades and domestic sizes. One interest reports the sale of 6000 tons to a gas company for delivery through the first quarter, and a like quantity for shipment through the first half.

Prices Reduced in South

Birmingham, Ala., Jan. 24.—Coke prices in the South have been reduced again, and the foundry grade is selling at $5 per ton. There has been no reduction in output. No large contracts have been booked.

Bar Orders Increasing

Tonnages Are Small and Unsatisfactory but Interest Grows—Report 1.40c Done but Most Business Placed at 1.45c to 1.50c

BAR PRICES, PAGE 240

Chicago, Jan. 24.—While demand for soft steel bars is slack compared with war years and those immediately following, it is not so bad when compared with general business before that time. A steady increase in demand is noted and large business is in sight as a result of railroad car buying. The general buyer is taking only what is needed for immediate use, but the aggregate of this need is growing and as stocks are depleted, any increase in output by the manufacturer is reflected in larger demand for raw material. At present price levels mills are not anxious to sell far ahead and as a result business is being conducted on a spot basis. Railroads are inclined to buy for deferred deliveries on finished steel, but mills are not taking the business that way. Soft steel bars range from 1.60c to 1.75c, Chicago, for lots of average size, while railroad carbuilders continue to obtain a concession to 1.50c, Chicago. It seems certain that at one point in the latter buying the price sagged to 1.40c, Chicago, on some material, but this seems to have been an isolated instance and did not make the market. Bar iron mills are running fairly steady on a hand-to-mouth basis, most of the buying being from railroads but other consumers are also taking small lots. This department is in slightly better condition than formerly but has no basis on which to expect continued operation. This market is steady at 1.60c to 1.65c, Chicago mill. Hard steel bars rerolled from rails are in little demand with the market probably at 1.50c, Chicago mill.

Prices Are Uncertain

Cleveland, Jan. 24.—Inquiries for bars continue to be received in moderate volume. Most orders involve less than 100 tons and it is difficult to classify the sales according to industries. While the automobile manufacturers are taking some tonnage, the bulk of the orders are being received from manufacturers of miscellaneous articles, including safes, shears, machine tools, steam shovels, etc. Agricultural implement makers also are in the market. Prices are uncertain. While 1.40c has figured in a few transactions, in each case the tonnage has been so low that the sales cannot be said to truly represent the market. The bulk of the business is going at 1.50c, Pittsburgh.

Orders Are Unsatisfactory

Pittsburgh, Jan. 24.—Orders for bars are of an exceedingly unsatisfactory character. For instance one large producer received but one order early this week for 50 tons made up of 30 sizes. Small lots are the rule, 50 to 150 tons being the general specification. While reports of lower figures are current in the East, 1.50c appears to be the general market in this territory although this condition exists largely because the market is untested. Makers admit that large tonnage inquiries would bring out lower quotations.

In connection with refined iron, the situation changes but little from week to week. Demand is erratic as are mill operations. Prices continue unchanged at around 2.15c, double refined iron being quoted at 4.00c, base Pittsburgh, the same figure applying to low phosphorus melting bars.

Bar Demand Improved

New York, Jan. 24.—Some improvement is noted in the demand for steel bars. However, orders generally are confined to two and three carloads. Prices usually quoted are 1.45c to 1.50c, base, Pittsburgh, but in some cases the equivalent of 1.40c, Pittsburgh, has been done. Sales of iron bars have been made at prices ranging from 1.45c to 1.50c, Pittsburgh.

Orders Are Scarce

Detroit, Jan. 24.—Demand for steel bars is dull, with few inquiries coming out. Here and there slight signs of activity are noted. Two dealers report they have indications that reopening of several Detroit plants, scheduled for Feb. 1, will result in several large orders.

Cold-Drawn Betterment Sustained

Pittsburgh, Jan. 24.—Measurable improvement is noted in connection with cold-drawn steel bars which are firm at 2.00c, base Pittsburgh. Occasionally a specification will bring an even higher figure such as 2.15c, base. Jobbers are engaged in filling depleted stocks and while individual orders are not sizable, the aggregate for a week is much better than the total orders received in a similar period during the past year. Makers are exceedingly encouraged, due to the fact cold-drawn steel was among the first of the steel products to feel the depression and since its inception stocks largely have been liquidated.

Demand Improving

Philadelphia, Jan. 24.—The steel bar demand is improving somewhat. The usual price is 1.45c to 1.50c, base, Pittsburgh, but 1.40c has been done on attractive lots in some cases and equivalent to 1.35c, Pittsburgh was done by an eastern reroller on a lot of 300 tons. Attractive lots of iron bars bring 1.45c base Pittsburgh as a rule, although this price has been shaded. Cold rolled strip steel appears firm at 3.50c base Pittsburgh. Cold rolled rounds are weak while the market is 1.90c base Pittsburgh. Attractive lots bring out 1.80c base Pittsburgh.

Hoop Shading Appears

HOOP PRICES, PAGE 240

Pittsburgh, Jan. 24.—Concessions on hoops now are appearing but so far these only have amounted to approximately $2 per ton. The market is quotable this week at 1.90c to 2.00c, base Pittsburgh. Bands remain quotable at 1.75c to 2.00c, base, with bar producers competing on the heavier gages with a bar base price. An accumulation of small orders enabled one or two producers to operate their hoop and band mills continuously since the first of the year. Orders usually are limited in size although an occasional one for a carload will be placed.

Demand for Bolts, Nuts and Rivets Falls

Chicago, Jan. 24.—Although demand for bolts and nuts has been slack for some time it has been less productive of orders the past week than during any other period. As a result producers are slackening operation and rapidly nearing the end of their order books. As a result of this condition competition for business is brisk and there seems to be as many prices as there are sellers.

Order Rate Is Slow

Pittsburgh, Jan. 24.—Orders for nuts and bolts have been coming in at an exceedingly slow rate. Local makers are interested in the nut and bolt requirements of the New York vehicular tunnel, aggregating about 4500 tons, although this will not come up until about Feb. 1. Less-than-carload sales make up the bulk of trading, with an occasional carload purchase, and plants only are operated on a limited scale either to fill up stocks where they are low or to use up raw material on hand.

What is true of nuts and bolts is likewise true of rivets. Small-lot purchases rule, although at times a buyer will specify a carload. Structural and boiler rivets are quoted at 2.25c and 2.35c, respectively, while smaller rivets are quotable at 70, 10 and 10 off.

Demand Is Improved

Buffalo, Jan. 24.—Appreciable bolt and nut business is being done with inquiry and sales running better than usual. A recent inquiry for two carloads of washers was placed at a price at least $5 a ton better than the average quotation.

Bolt Demand Falls Off

Cleveland, Jan. 24.—Makers report demand for bolts, nuts and rivets has fallen off slightly during the past week. No large orders and inquiries are noted, although one maker states that during the week it has been awarded contracts for several carloads of bolts and nuts. However, despite the low demand prices generally are holding, although on large tonnages no doubt shading would develop. The leading rivet maker here reports a slackening in its demand during the past week but it states that its prices are being maintained.

To Build Chicago Plant

The Niagara Radiator & Boiler Co., Tonawanda, N. Y., has bought 10 acres at Woodlawn avenue and East Eighty-

third street, Chicago, on which it will build a 1-story foundry and machine shop, 140 x 175 feet. The contract has been let to the Sumner Solitt Co., 225 North Michigan avenue, Chicago. A warehouse four stories high costing $100,000 will be built later. The Chicago plant is in charge of George Furman, who has had wide experience in the metal field.

Copper Merger Announced

Control of the American Brass Co. Waterbury, Conn., has finally passed into the hands of the Anaconda Copper Mining Co., according to announcement made recently by E. S. Wayland, secretary of the Waterbury company. The Anaconda Copper Mining Co. has entered into a contract to purchase all or any portion of the capital stock of the American Brass Co. during the month of January, 1922, for $150 in cash, and three shares of capital stock of the Anaconda Co. for each share of stock of the American Brass Co. At least 51 per cent of the stock is reported as already in the hands of the mining company. In consequence of this acquisition, the Anaconda company is in the market for practically all the customs copper ore it can obtain. The requirements of the various plants of the American Brass Co. will call for more copper and zinc than the Butte properties of the Anaconda are capable of producing.

Plate Trade More Brisk

Outlook Brightens as Ship Tonnage Continues To Be Offered—Increase Noted in Demand for Oil Tanks—Fair-Sized Inquiries Pending

PLATE PRICES, PAGE 240

New York, Jan. 24.—The outlook in the eastern plate market is brighter than in some time by reason of the increase in tonnage up for consideration. For the first time in more than a year vessel construction is looked upon as a promising factor. Whittlesey & Whittlesey, 17 Battery Place, New York, took bids on Saturday for the construction of six passenger vessels for the Tri-National Steamship Co. Certain American yards have been asked to submit bids on two 1100-ton combination passenger and cargo vessels for private interests in Mexico. It is stated also that plans for two 11,000-ton passenger vessels, to ply between Tampico and Europe, shortly will be put out more oil storage tanks have come out. The Tidewater Oil Co. placed with the Warren City Tank & Boiler Works, Warren, O., a contract for the construction of eight 74,000-barrel oil storage tanks in Jersey City. The Vacuum Oil Co. has placed orders for three storage tanks to be erected in Texas and two in Paulsboro, N. J. Approximately 240 tons of plates are required for the construction of four shields to be required in driving the New York-New Jersey vehicular tunnels. It is considered likely that the Western Union Telegraph Co., now that it has announced its intention to lay a cable to Germany, will place an order shortly for a cable laying boat. Plates are quoted here at 1.45c to 1.50c, base Pittsburgh, with a possibility of the equivalent of 1.40c, base Pittsburgh, on attractive orders.

Inquire For 3000 Tons

Pittsburgh, Jan. 24.—Among inquiries for plates now before the trade is one for 3000 tons on which the minimum quotation here appears to be 1.50c, base Pittsburgh, although lower figures are reported current in the East. Fabricators report that while inquiries for tanks are not so numerous, a few continue to come in, involving 50 to 1000 tons. The Petroleum Iron Works is reported to have been awarded three 74,000-barrel tanks by the South Bend Oil Co. and this will involve about 1000 tons of plates.

Plate Demand At Minimum

Chicago, Jan. 24.—Buying of steel plates is slack. This product, costing considerably more to manufacture than bars and shapes, is offered at the same level, although consumers are not interested in covering tonnages. No demand exists for oil storage tanks, and about the only hope for plates is in car buying. Some small demand for plates is being received from tank and boiler manufacturers and for car repairs. The market is the same as on other finished steel, about 1.60c to 1.75c, Chicago, on small lots, and 1.50c Chicago, for railroad cars.

Sell Plates for Storage Tanks

Cleveland, Jan. 24.—Although few inquiries have been received in this district for plates, oil interests are known to have placed orders for tanks which will require several thousand tons of this material. The Phoenix Iron Works Co., Meadville, Pa., has booked an order for 17 tanks for the Sinclair Crude Oil Purchasing Co., Cushing, Okla. It is understood about 5000 tons of plates will be required. The Reeves Bros. Co., Alliance, O., has received a contract for two oil storage tanks to be built at Paulsboro, N. J. for the Vacuum Oil Co.

Valley Mills Book Orders

Youngstown, O., Jan. 24.—Plate orders aggregating about 2000 tons were placed in this district recently, and as a result three of the four plate mills here are under schedule. An inquiry for tank plates totaling about 1000 tons now is pending. The sheared plate market here is quotable at 1.50c,

Eastern Buying Restricted

Philadelphia, Jan. 24.—Plate buying in this district is limited to small tonnages at the usual price of 1.45c to 1.50c, base Pittsburgh, with 1.40c a very exceptional factor.

The Nonferrous Metals

	Copper: Electro delivered	Copper: Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Nickel spot
Jan. 18.....	13.80	13.87½	32.37½	4.70	4.72½	17.50	4.45	35.00
Jan. 19.....	13.80	12.87½	32.37½	4.72½	4.72½	17.50	4.45	35.00
Jan. 20.....	13.80	13.87½	32.12½	4.72½	4.72½	17.50	4.45	35.00
Jan. 23.....	13.80	13.80	30.50	4.72½	4.67½	17.50	4.45	35.00
Jan. 24.....	13.80	13.80	31.37½	4.72½	4.65	17.50	4.45	35.00

†Open market quotation.

NEW YORK, Jan. 24.—The nonferrous metals continue inactive, with the only display of strength being a slight marking up of lead prices by certain sellers. Tin has been decidedly weak the past few days on account of the collapse of the market in London, and zinc has slipped a little lower, while copper has had a hard time holding its own.

Neither galvanizers nor brass makers appear to want any more zinc than they already have contracted for, which is not much. Only a little nearby business is being done, with the result that metal was easily available today at 4.65c, St. Louis, for prime western, prompt shipment. For February a few points more is asked.

Tin has fallen from around 33c a pound, the recent high mark of the bull movement, down almost to 30c. Some bids were made yesterday at this figure but it is not believed sellers accepted them. Little business has been done in the past two days, so that the market is more or less nominal. Today the bid and offer prices were a little higher, 31.25c to 30.50c for spot Straits in New York, with futures half a cent less. This strength was in the face of continued weakness abroad.

Copper has been in a dull market, with little being sold either for domestic use or export. Some metal was offered in the outside market yesterday as low as 13.50c refinery, but today around 13.75c seemed to prevail. Castings copper is firm at refinery. It is much firmer than electrolytic. Brass and copper product prices are unchanged.

Lead was strong yesterday and today, with 4.45c St. Louis the prevailing price today for the metal sold on the middle western basis, while the New York price was steady, 4.70c to 4.75c. Some business for prompt shipment is going in this metal and it appears to be in much better position.

Aluminum has been weak again, and can be had as low as 17c for new 98 to 99 per cent. Some quotations are 18c for imported, while the domestic producer is unchanged at 19c for this grade.

Scrap Dullness Continues

Buying and Production Are on Small Scale—Some Grades Are Scarce—Price Fluctuations Reported in Several Markets

SCRAP PRICES, PAGE 300

Chicago, Jan. 24.—Steel scrap presents practically the only activity in the scrap market, an independent mill having bought some recently, while some other consumers have been willing to take such bargains as offer. As a result these grades are holding their prices fairly firmly, although a weaker condition exists in most of the list. Cast scrap is in better demand than most other grades, foundries being in need of material and taking fair tonnages. Malleable scrap is scarce and is holding its price more steadily than any other grade in this market. This is because there has been no accumulation and production has been absorbed steadily. In general the market is dull with comparatively light offerings and little buying except as already noted. The only important list now current was issued by the Santa Fe railroad and involves 3600 tons.

Buying for Speculation

Boston, Jan. 24.—Trading in scrap in Boston and eastern Massachusetts in the past week has been almost exclusively for speculation. Old orders from Pennsylvania mills have been completed for the most part and current quotations are below local dealers' idea of prices. A Massachusetts consumer has been taking some heavy melting steel but only small amounts for current needs. The larger dealers all seem confident of an advance in prices and are willing to pay above the present consuming market for supplies in certain lines. Especially is this true in heavy melting steel and cast iron borings. Dealers have paid as high as $9 for chemical borings and straight soft borings easily command $7.50. Heavy melting steel has advanced from $7.50 to $8 with a few scattered sales reported at $9. Even the cast scraps have not softened in the face of the meager demand from consumers during the past week. One sale of No. 1 machinery scrap was made at $18.50 delivered and supplies of this grade of scrap are scarce. Heavy cast is without demand and prices are nominal at $17.

Only Small Buying Reported

New York, Jan. 24.—Activity in scrap is comprised principally of small buying in heavy melting steel and borings and turnings. In normal times, such trading hardly would be noticed. A feature is some inquiry for a few hundred tons of scrap iron for shipment to Germany. Some of this business has already been placed. The Brooklyn navy yard closed bids yesterday on 2000 tons of scrap for ballast. Prices are weak but unchanged.

All Have Large Stocks

Pittsburgh, Jan. 24.—Pittsburgh and Mahoning valley district consumers of scrap for the most part have large stocks and are in a position to make price offers attractive only to themselves. A few steel companies still are in the market for scrap, however. Dealers are bidding slightly higher figures for the better forms of steel scrap, namely knuckles and couplers, coil and leaf spring and steel car wheels. All of these grades are marked up 50 cents per ton to $15.50 to $16. Axle turnings at $11.50 to $12 are $1 above shoveling turnings, an advance of 50 cents over a week ago, but heavy melting steel continues quotable at $14.50 to $15. While in some directions it is felt the possibility of the United States Steel Corp. units entering the markets for large scrap supplies is what has been sustaining the market at or around present levels for some time past, no actual indication of that yet has appeared aside from the National Tube Co.'s recent purchase of two lots of 500 tons each of cupola cast at around $16.50.

Improvement Appears

Buffalo, Jan. 24.—Business in scrap is better than it was in the last few weeks in December but it is not brisk. Prices are firm as no large tonnages can be bought at present quotations. It is doubtful if anything in excess of 1000 tons could be bought at the present heavy melting steel quotation of $13.50. Mills will buy but will not pay more than that even though their stocks are low. Rejections are heavy.

Did Not Affect Prices

Detroit, Jan. 24.—Dealers continued to show activity in the Detroit iron and steel scrap market, but lacking the support of the bigger men in the business a recent flurry did not have any appreciable effect on prices. Malleable, on the other hand, fell off slightly, dropping to $8.50 after having maintained a $9 level consistently for some time.

Some Reserves Exhausted

St. Louis, Jan. 23.—The market for scrap is dull and devoid of interest. The industries are taking nothing in the way of tonnage, and most of the large plants are well stocked with scrap. Some have exhausted their reserves and are nibbling at the market, several having taken on small quantities to fill in. One mill interest purchased some special material and has out inquiries for several hundred tons more. Users and dealers are wide apart in their views on a number of important items, notably rerolling rails. Most of the yards are well supplied, and are anxious to sell in order to realize cash, but are unwilling to sacrifice their material. New material during the week was lighter than for some time past. The railroads had out no formal lists. Nothing in the way of country scrap has been arriving, but holders at Southern points are anxious to dispose of their accumulations.

Trading in Small Lots

Birmingham, Ala., Jan. 23.—Improvement remains to be reported in the scrap market and the dealers here appear as much without hope as on the turn of the year. With one or two exceptions there appears to be plenty of stock in all kinds of scrap and needs can be met promptly. What little business is being transacted is in small lots. Heavy melting steel consumption shows little improvement. No. 1 cast and stove plate have had little demand for some time. All quotations are weak and the published prices are not looked upon as nominal.

Offer Prices Too Low

Philadelphia, Jan. 24.—While three eastern steel plants are in the market for steel and certain grades of cast scrap, little business is resulting because prices the mills offer are lower than the dealers will accept. An exception is in stove plate in which fair transactions have been reported at $14 delivered but with a tendency toward $14.50.

Buying Limited at Cincinnati

Cincinnati, Jan. 24.—There has been scant buying of iron and steel scrap in the Cincinnati market for more than a week and with the withdrawal of those furnace consumers who up to a fortnight ago were in the market from time to time for fair tonnage, the slump is noticeable, this having been about the only outlet for several weeks. Yard stocks are reported heavy and there has been a considerable recent tonnage movement from the country. No further changes have been made in current quotations, which, however, in view of the known willingness of wholesale dealers to make concessions, are regarded as purely nominal.

Buys Machine Shop Turnings

Cleveland, Jan. 24.—The iron and steel scrap movement in the Cleveland district continues limited. The most conspicuous transaction of the past week was the purchase by a local steelmaker of 600 to 800 tons of machine shop turnings reported to have been obtained at $8 delivered. No other grades are moving and prices are unchanged but nominal.

Warehouse Demand Still Low; Prices Hold

WAREHOUSE PRICES, PAGE 296

Cleveland, Jan. 24.—Jobbers in iron and steel materials in this district report demand appears better than a week ago. The leading interest states that to date its orders are considerably improved over those in December while independent jobbers report a like situation. The manufacturing trade in general is doing little buying it is understood, but building supply men are placing orders in fair quantities. Prices are holding at the established levels.

Prices Are Cut Further

Boston, Jan. 24.—Continued dullness in nearly all iron and steel warehouse

commodities has resulted in a further cut by Boston houses. Bars, shapes and plates have each been cut 16 cents and bands have been reduced from 3.315c to 3.15c. Sheets, both black and galvanized, have been enjoying more activity than other grades and the old prices still hold. Cold rolled shafting is also quoted the same as a week ago.

Demand Is Small

New York, Jan. 24.—While a few inquiries are coming out, the local warehouse market continues far from active. Jobbers state structurals and sheets are moving more freely, but the total volume of business is small. Competition on the part of the mills is still being keenly felt. Prices are unchanged.

Prices Continue To Hold

Philadelphia, Jan. 24.—Prices for iron and steel materials out of warehouse remain unchanged. However, jobbers report there is no improvement in demand, which continues at about 25 per cent of normal.

Canadian Production of Iron and Steel Falls

Returns to the Canadian bureau of statistics show that the production of pig iron and steel during December reached the lowest level in years. The output of pig iron was 39,917 long tons as compared with 41,232 tons in November. Although five blast furnaces were in operation at the start of the month there were only two active on Dec. 31, one at Hamilton, Ont., and the other at Sydney, N. S. The total production of pig iron for the year was 595,000 tons.

A still greater falling off occurred in the production of steel ingots and castings, the December output being 42,655 tons as compared with 75,039 in November. The total production of steel ingots and castings in 1921 was 667,484 tons as compared with 1,109,000 tons in 1920.

Strip Orders Increase

STRIP PRICES, PAGE 240

Pittsburgh, Jan. 24.—Spot buying continues in connection with both hot and cold-rolled strip steel. Several makers report more orders have been received since the first of the year than in any one month during the past 12. These call for 50 to 200 tons with an occasional larger tonnage, and originate in diversified lines of manufacture. Cold-rolled is quoted at 3.50c, base Pittsburgh, with an occasional specification bringing a higher figure, while the market on hot-rolled with most producers is represented by a minimum figure of 2.00c, base Pittsburgh. In connection with the latter product, however, some prices around 1.90c have appeared but largely are issued by skelp and blue-annealed sheet mills in an effort to compete on strip steel business.

Lippincott, Mills & Co., 17 Battery Place, New York, dealers in iron and steel products, ferroalloys and ores, have opened a Pittsburgh branch in the Arcade building, Pittsburgh, with George C. Mills as resident manager.

Sheet Orders Diversified

Mills Accumulating Business, with Increase in Demand for Black Sheets from Japan—Buying of Fine-Finished Grades Increasing

SHEET PRICES, PAGE 240

Pittsburgh, Jan. 24.—Present demands for sheets come from diversified sources and are fairly satisfactory. The regular jobbing trade is supplying the bulk of the business. Black and galvanized sheets continue firm at 3.00c and 4.00c, base Pittsburgh, respectively, and while orders for blue annealed sheets at 2.25c, base, are not numerous, some are being placed at that figure. Plate mills, however, still are a factor in connection with business in blue annealed, although sheet mills have been supplying some tonnages for barrel stock, small oil tanks, range boilers and the like. In addition to numerous orders for black and galvanized sheets from its domestic trade the American Sheet & Tin Plate Co. recently received additional orders for black sheets from Japan in gages 27½ to 31. The majority of specifications are for the lighter gage material. Operations of the leading interest continue at a comparatively high rate although slightly under last week's figure of about 75 per cent. Various estimates of independent sheet producers' operations are heard but the general average appears to be around 40 per cent of capacity. There has been no increase as yet in demand for full finished automobile sheets, although this is expected. The price remains unchanged at 4.35c, base Pittsburgh, with a few orders being placed occasionally. A few sizable inquiries are current but a number of automobile manufacturers are known to be working upon additional specifications.

Market Is Fairly Firm

Buffalo, Jan. 24.—The sheet market is fairly firm but some shading has been done. One hundred and thirty tons of galvanized sheets were placed last week with a jobber, at 3.85c. An inquiry out now calls for 100 tons for roofing.

Detroit Inquiries Encouraging

Detroit, Jan. 24.—Inquiries are being received in encouraging numbers and have given the sheet market a firmer tone.

Broader Demand Expected

Youngstown, O., Jan. 24.—Mahoning valley sheet mill operations increased 5 per cent this week to a 43 per cent operating basis. Mill schedules are such that delivery is possible within two or three weeks. While individual tonnages are not large, the aggregate was sufficient to warrant all makers starting the week with four or more active mills. Meanwhile orders are accumulating. A better feeling prevails in the trade generally, and the demand is expected to broaden considerably during this and the following quarter. Prices now are conceded firmly established at 2.25c for blue annealed, 3.00c for black and 4.00c for galvanized, base, Pittsburgh. Demand for fine finished sheets has been increasing since the first of the year and at present a large percentage of the mills could not offer delivery on new business in less than six weeks. This statement is substantiated by a large maker of medium priced automobiles who last week inquired for a round tonnage of sheets from an eastern Ohio producer for immediate shipment. Sheets of the desired specification not being in stock, the consumer took part of the tonnage in the next nearest size and left the balance of the order to be filled as soon as possible. What appears on the surface to be an evidence of confidence in the future is the fact that a few consumers are placing orders on mill books. Not a few 200-ton orders have been placed during the past two weeks, customers leaving the shipping dates open for any time within the next two months. High grade sheets are quotable a 4.35c, base, Pittsburgh.

Domestic Demand Light

Chicago, Jan. 24.—Buying of steel sheets by domestic users continues far below normal, and except for bookings for export to the Orient some sheet producers would be able to operate at only about 50 per cent. The Inland Steel Co. has its sheet department running full and with considerable business ahead, about equally divided between domestic and export. Some increase is seen in inquiry and buying by American users, but it is proceeding slowly. Prices are unchanged from the schedule previously prevailing: 2.25c, for blue annealed, 3.00c for black and 4.00c, Pittsburgh, for galvanized.

Eastern Market Firm

Philadelphia, Jan. 24.—The sheet market here is firm, and occasional irregularities noted earlier in January no longer are factors. Demand is not showing much improvement and is limited usually to carload lots or less for immediate shipment.

To Hold Tool Auction

C. A. Calleson, 50 Church street, New York, will conduct an auction sale of consigned machinery on Feb. 1 at his warehouse at 420 Claremont avenue, Jersey City, N. J. All equipment is now on inspection at the sales room principle consignments being from the several plants of the Savage Arms Corp. It is understood that the next large sale of machine tools by this dealer will take place March 1 at the plant of the Savage Arms Corp. Sharon, Pa., where about 650 lots will be offered.

Buys Pipemaking Rights

New York, Jan. 24.—The United States Cast Iron Pipe & Foundry Co., Burlington, N. J., announces that it has purchased from a Canadian syndicate headed by Gordon Perry, the exclusive rights to use the De Levaud process in the manufacture of cast iron pipe in the United States and its possessions and in Cuba.

Structurals Active in East

Bulk of Awards and Inquiries Comes from Atlantic Seaboard—Country Generally Shows Gain in New Construction Movement

STRUCTURAL SHAPE PRICES, PAGE 240

Chicago, Jan. 24.—Without competition as to size and importance, the inquiry of the Chicago Union Station Co. for 20,000 tons of structural material for the headhouse and concourse of the union station is the most important matter now in the structural field. Its size, however, is one of its difficulties and it seems possible if not probable, that the large tonnage will not result in as low a price on the plain material as could be obtained for a more modest lot. Inasmuch as delivery of the material will extend over approximately a year, mills are not anxious to obligate themselves for large tonnages extending that far and present low prices are intended for application only to nearby deliveries. Only a few fabricators are sufficiently large to handle such a project and while bidding is expected to be spirited, it will not be participated in by many fabricators. Bids will be opened Jan. 28 at Chicago. It is understood the plain material for a Masonic temple at Oklahoma City has been awarded by this interest to the Illinois Steel Co. and the Bethlehem Steel Co.

Apartment Construction Active

New York, Jan. 24.—Unusual actvity for this season in the structural market is especially noticeable in loft buildings and apartment houses and other commercial work is more general. The largest award of the past week was 4500 tons for the Standard Oil building and the leading inquiry of the week was 3500 tons for a hotel at Syracuse. Fabricated prices of structural steel are tending upward, being quoted now at $60 to $65, erected. Prices of plain material are weak, the market being quoted at 1.45c to 1.50c, Pittsburgh.

1.45c Being Done

Pittsburgh, Jan. 24.—While 1.40c, base Pittsburgh, is named as a possibility in connection with large tonnages of plain structural material, 1.45c is the lowest that has appeared in actual transaction. This is a concession of $1 per ton under the market's minimum as prevailed a week ago and is understood to apply only to fair sized lots, small tonnages bringing 1.50c. Awards have been few and far between recently. Several projects, including a few industrial buildings, bank and school structures, are coming up for attention, many of which are revivals, including the Mellon National bank on which bids again are being taken until Feb. 2. About 2000 tons are involved.

Large Jobs Hold Off

Boston, Jan. 24.—While an encouraging amount of structural steel work is planned and in some cases awarded, actual work on most jobs is still held up for one reason or another. The outlook, however, is decidedly hopeful and most steel interests look for a banner year in the point of tonnage. One authority estimates that from 18,000 to 20,000 tons for work in eastern Massachusetts will be placed before summer. The Edison Electric Light Co. has let a contract for an extension to its South Boston plant and while details in this connection are not available, former plans call for 1200 tons of steel. Prices hold close to 1.50c Pittsburgh base for standard shapes. A recent order for several hundred tons was placed at this figure and the purchaser reports inability to obtain lower quotations. In contradiction to this, some smaller jobs have been let at slight concessions below the 1.50c price.

Tonnages Are Moderate

Philadelphia, Jan. 24.—The shape sales in the past week in this district were limited to a few moderate tonnages at the usual price of 1.45c to 1.50c, Pittsburgh but 1.40c, Pittsburgh, is being done occasionally on attractive lots.

Railroad Bridge Up

Cleveland, Jan. 24.—Local fabricators are interested in an inquiry which is reported here for 2000 tons of structural materials for a railroad bridge at Boonville, Mo. The Missouri, Kansas & Texas railroad crosses the Missouri river at that point while the Missouri Pacific parallels the river. It is not stated which railroad is making the inquiry. Locally, an award is expected shortly on 200 tons for the Elyria Savings & Trust Co. work at Elyria, O., and also on the 200 tons involved in a building for the National Supply Co. at Toledo. No change in the prevailing prices of plain material has been reported.

CONTRACTS AWARDED

Masonic Temple, Oklahoma City, Okla., 1535 tons, to J. B. Klein Iron & Foundry Co.

Municipal and Memorial building, Ironwood, Mich., 117 tons, to Worden-Allen Co.

Store building, 715 Nicollet avenue, Minneapolis, Minn., for Leopold Metzger, Minneapolis, 107 tons, to Crown Iron Works.

Bridge tramway for Cheswick Power Co., 400 tons, to Heyl & Patterson.

Addition to the B. F. Jones building, Pittsburgh, 100 tons, Jones & Laughlin Steel Co.

Kresge Store building, Boston, 450 tons to an independent fabricator.

Second building for First National bank, Boston, 1500 tons, to New England Structural Co.

Uris apartment, Riverside drive and 108th street, New York, 800 tons, to A. E. Norton, Inc.

Hotel, Broadway and Ninety-sixth street, 800 tons, New York, to A. E. Norton, Inc.

Factory for J. L. Hammett & Co., Newark, N. J., 250 tons, to Hay Foundry & Iron Works.

Bridge, Central Railroad of New Jersey, 150 tons, to Phoenix Bridge Co.

Tanks, Vacuum Oil Co., Texas, 1700 tons, to Warren City Boiler Works.

Two buildings, Johns Hopkins university, Baltimore, 600 tons, to McClintic-Marshall Co.

Factory building, American Book Co., Plainfield, N. J., 375 tons, to Shoemaker-Satterthwaite Bridge Co.

Boiler house, Brooklyn Edison Co., Brooklyn, 650 tons, to Shoemaker-Satterthwaite Bridge Co.

Hamilton apartment hotel, Seventy-fifth street, New York, 600 tons, to Harris Structural Steel Co.

Corn Exchange bank branch, Canal street, New York, 150 tons, to Harris Structural Steel Co.

Chippewa reservoir and dam improvement near Winter, Wis., 150 tons to Worden-Allen Co.

Tuberculosis sanatorium at National Soldiers' Home, Milwaukee, 135 tons, to C. Hennecke Co.

CONTRACTS PENDING

Putnam department store, Davenport, Iowa, 1000 tons, bids asked for Jan. 26.

Municipal power plant, Lansing, Mich., 1470 tons, to Detroit general contractor.

Jones Island sewage disposal plant, Milwaukee, 450 tons, bids opened, du Pont Engineering Co., low bidder.

High school, Quincy, Mass., 500 tons, bids being taken.

High school, Worcester, Mass., 650 tons, plans to be ready in a week.

Memorial hospital, Baltimore, 2000 tons, bids being taken.

Addition, Brooklyn Edison Co., 600 tons, bids being received.

Hospital, Elizabeth, N. J., 1100 tons, bids asked.

French office building, Madison avenue, New York, 900 tons, bids invited.

Office building, Washington avenue, New York, 1000 tons, bids being taken.

Claman apartment, Forty-third street and Eighth avenue, New York, 1800 tons, bids asked.

Webster apartment, Thirty-fourth street, New York, 1200 tons, bids being taken.

Grassi Bros. apartment, Eighty-first street and Park avenue, 300 tons, bids invited.

Two buildings, New York Edison Co., New York, 600 tons, bids being received.

Lapidus apartment, Lexington avenue, New York, 300 tons, bids being taken.

Building for the Mellon National bank, Pittsburgh, approximately 2000 tons. Bids close Feb. 2.

Railroad bridge over Missouri river, at Boonville, Mo., 2000 tons, bids asked.

Hotel, Syracuse, N. Y., 3500 tons, bids asked.

Take Bids on Tunnel and Stadium Bars

REINFORCING BAR PRICES, PAGE 240

New York, Jan. 24.—Requirements of the proposed stadium for the New York American League baseball club and of the proposed New York-New Jersey vehicular tunnel, are the most important tonnages now up in the concrete bar market here. For the stadium, 670 tons will be required and for the tunnel, 547 tons. Bids on the general contract for the construction of the stadium will be opened the latter part of this week and the contracts for the construction of the tunnel on Feb. 7. Several school buildings are expected to be closed here shortly. The concrete bar market is quoted generally at 1.50c, base Pittsburgh, for shipment at the convenience of the mills, but 1.45c, is being done occasionally, on attractive lots.

One Large Lot Purchased

Pittsburgh, Jan. 24.—About 800 tons of reinforcing concrete bars for the Gibson hotel, Cincinnati, were bought in the past week. This constitutes one of the largest orders placed recently although several smaller ones are current. Prevailing quotations on reinforcing concrete bars are from 1.45c to 1.50c, base Pittsburgh.

Market Continues Quiet

Boston, Jan. 24.—The type of construction in recent building awards in New England has been unfavorable to reinforcing bar interests, and as a result dealers in bars are not encouraged over the situation. Re-

cent contracts for bars have nearly all been below 100 tons and the aggregate to date in January is less favorable than it was in December for the same period. Reinforcing bars still are held nominally at 1.50c, Pittsburgh base, but this is being shaded in several cases and local dealers have cut their price on bars to 2.20c to 2.30c.

CONTRACTS AWARDED

Furniture building, Boston, 100 tons to independent fabricator.

Filtration plant at Charlottesville, W. Va., 125 tons to the Concrete Steel Co.

Gibson hotel, Cincinnati, 800 tons to a Cincinnati contractor.

CONTRACTS PENDING

City Development building, Boston, 105 tons, bids in.

Longview hospital, Cincinnati, 200 tons.

Building for the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., approximately 300 tons.

Mellon National Bank building, Pittsburgh, 200 to 300 tons, new bids taken until Feb. 2.

Piers at Bremerton on navy yard, Seattle, 2000 tons. Henry McPhee, Seattle, low bidder on general contract.

New York-New Jersey vehicular tunnel, 547 tons, bids on general contract to be opened Feb. 7.

Baseball stadium, New York American League team, New York, 670 tons, general contract pending.

Hotel, Orlando, Fla., 300 tons, pending.

School building, Quincy, Mass., 200 tons, pending.

Hotel, Johnson City, Tenn., 400 tons, pending.

Bridge, York, Pa., 140 tons, pending.

Weather Hits Wire

And Nail Sales—Active Business Indicates New Construction

WIRE PRICES, PAGE 240

Chicago, Jan. 24.—While demand for wire and nails continues excellent, a distinct falling off was noticed last week in the volume of business coming from the West and Northwest, which has been in the grip of cold and snowy weather. Business from the South was uninterrupted and on the whole new business compared favorably with preceding weeks. Prices are being well maintained and no tendency to shading has been noted. Manufacturers appear to be responding slowly to the uplift of business and the demand for wire for their purposes is not increased in proportion to that of nails. At present most business is for nails, indicating an active building season.

Orders Are Not Large

Pittsburgh, Jan. 24.—Operations of the wire mills, continue to average between 50 and 55 per cent of capacity. Present business coming to makers in this district bears the same character as that placed during recent weeks, with jobbers replenishing stocks as depletions manifest themselves. While the market on nails cannot be said to be firm at 2.50c, since competition below that figure to the extent of $2 per ton has been met, 2.50c continues to represent the general market quotations. Plain wire is quoted at 2.25c while cement coated nails are firm at 2.00c, base Pittsburgh.

The Worcester Automobile Body & Welding Co., Worcester, Mass., elected these officers at its annual metting held Jan. 20: President and general manager, Joel Bjorklund; treasurer, Arvid Karto; and directors, the officers and Toivo Klinga.

Railroad Buying Reviving

Car Orders, Equipment Inquiries and Rail Tonnages Pending Add to Interest in Markets—Gary Rail Mill Soon To Restart

RAILROAD TRACK MATERIAL PRICES, PAGE 240

Chicago, Jan. 24.—By far the most important movement by railroads as affecting the steel market, is the placing of cars and from the large number on inquiry an occasional lot is awarded builders. Placing of 127 all-steel passenger equipment cars by the Burlington railroad a week ago marks the largest order of this sort ever placed with western builders, as far as recollection of experienced observers goes. Placing of an order for 7300 freight cars by the Burlington is expected to be accomplished in the present week. This will be one of the largest freight car orders ever placed. Numerous other inquiries have become more active since the first of the year and are expected to result in buying before long. The rail mill at Gary will resume production Jan. 30 after being down practically the entire month. It faces a tonnage for eastern roads, sufficient for three or four months operation, and meanwhile other rail business is appearing. The Southern is inquiring for 36,000 tons and the Chesapeake & Ohio railroad for 25,000 tons, part of each order being likely to be rolled at Chicago mills. The Rock Island, the Illinois Central and Union Pacific are likely to buy some further tonnage for 1922 delivery.

Mexico Wants Cars

New York, Jan. 24.—An inquiry for 10,000 narrow gage composite box cars has been issued by the National Railways of Mexico, through their offices at 233 Broadway. Foremost among domestic inquiries is a lot of 3300 refrigerator cars. Other inquiries are small, not involving more than 100 cars each. Car orders total about 2500 cars, the largest single order involving 500 box cars and 500 steel hopper cars. In addition, award of a contract has been made for the repair of 850 box and hopper cars.

Coal Mines Order Sparingly

Pittsburgh, Jan. 24.—Light rail sellers continue to watch conditions in the coal mining industry with keen interest since from that direction alone is coming what little light rail business is developing at present. Single carloads are being taken at 1.50c to 1.55c, base Pittsburgh. Relaying rails reflect the same general situation with inquiries for from 50 to 300 tons appearing at times although total sales are far below the usual rate. Prices of from $26 to $30 represent the general market. Orders for 1000 kegs or more of standard spikes are being entered at 2.20c, base Pittsburgh, while smaller spikes bring as high as 2.35c, base Pittsburgh.

Buys 65 Passenger Cars

Philadelphia, Jan. 24.—The Philadelphia & Reading railroad has placed 50 passenger cars with the Harlan & Holtingsworth plant of the Bethlehem Shipbuilding Corp. and 15 with the Standard Steel Car Co. The railroad will place 50 more in the next few days and is negotiating for 500 to 2000 freight cars. The Pennsylvania is taking bids on 20 diners but likely it will build them at its Altoona, Pa., shops. The light rail market is dull. Prices range from 1.50c Pittsburgh to 1.50c, eastern mills.

CAR ORDERS PLACED

Chicago & Northwestern railroad, 45 steel passenger train service cars to American Car & Foundry Co.

Delaware, Lackawanna & Western, 500 box cars and 500 hoppers, to the American Car & Foundry Co.

Central Railroad of Georgia, 500 box cars, to the Mt. Vernon Car Mfg. Co.

Northern Refrigerator Car Co., Milwaukee, 500 refrigerator cars, to the Haskell & Barker Car Co.

Philadelphia, & Reading, 50 passenger cars, to the Harlan & Hollingsworth plant of the Bethlehem Shipbuilding Corp., and 15 to the Standard Steel Car Co.

CAR ORDERS PENDING

Great Northern railroad, revised bids asked Feb. 6 on 3100 cars inquired for in 1921.

National Railways of Mexico, 10,000 composite narrow gage box cars.

Pacific Fruit Express, 3300 refrigerator cars.

Union Pacific, 70 cabooses, bids being asked.

Philadelphia & Reading, 500 to 2000 freight cars, bids being taken.

Pennsylvania, 20 dining cars, bids asked.

Asks Bankruptcy Order

The Woonsocket Wagon Mfg. Co., Woonsocket, R. I., builder of pleasure car bodies, drop forging, etc., has been petitioned in bankruptcy by three creditors whose claims aggregate $9215.97. John M. Hendricken, Boston, and James A. Tillinghast, Providence, R. I., have been appointed receivers for the company. The company was incorporated in 1901, with $100,000 capital. H. A. Cleveland is president and F. B. Cleveland, is treasurer and general manager.

Buys Scale Company

Irving H. Page has purchased the bankrupt estate of the National Scale Co., Chicopee Falls, Mass., builder of counting machines and elevating trucks, for $12,700 cash, subject to mortgages of approximately $49,500, which he has agreed to assume. Mr. Page says he buys in the interests of a syndicate of stockholders of the company who plan to reorganize and operate the business.

Wire Company Re-Elects

The Wire Goods Co., Worcester, Mass., at its annual metting held Jan. 21, elected the following officers: President and treasurer, Reginald Washburn; secretary, L. H. Janes; clerk, Irving A. Green; directors, Charles G. Washburn, Reginald Washburn and Robert M. Washburn, Boston.

Wire Rod Tonnage Wanted

Some Business Closed at $26, Pittsburgh; While $29 Is Done in Spot Market for Sheet Bars—Releases More Numerous

SEMIFINISHED STEEL PRICES, PAGE 240

Pittsburgh, Jan. 24.—Demand for semifinished material continues slack, although wire rods and skelp occasionally are ordered. A fair number of small lots of sheet bars have been under negotiation and some business has been closed. While for extended deliveries makers seem unwilling to go below $30, $29 has been done in the spot market. No inquiries are being issued here for billets and slabs, conversion mills being unable to compete in the open market on the finished product with those which make their own steel. Billets, 4 x 4-inch, continue to be quoted nomirally at $28 to $30, while slabs are $28 to $29, which represents available prices in this district. Wire rods are quoted at $36 to $38, the maximum being more or less nominal in view of the fact that the lower figure has been done on fair sized lots by large producers. One inquiry was current in the past week involving 10,000 tons from a district outside of Pittsburgh, and on this some purchases have been made on the basis of $36, Pittsburgh. Skelp continues to be offered at 1.50c to 1.60c, base Pittsburgh,

Slight Increase In Releases

Youngstown, O., Jan. 24.—While no new business developed in the semifinished market here in the past week, makers report a slight increase in the tonnage released on specifications against contracts. Sheet bars continue to dominate sales of semifinished, the market being quotable at $29 to 30, Youngstown, the latter figure being mentioned in connection with a majority of sales. Approximately 100 tons of heavy billets were taken last week by a maker here at $30, Youngstown for consignment into the Pittsburgh district. Demand is lacking for either heavy or light billets which continue to be quoted at $28 to $30, Youngstown.

Rerollers Sold at $29

Philadelphia, Jan. 24.—Several carloads of billets were sold in this district in the past week at $29, base Pittsburgh, for open-hearth rerollers and $33 for forging quality. A large tonnage for immediate rolling would be accepted at $1 less, but no such tonnage is in sight, so $29 and $33 represent the market on current business.

Dullness in Alloys

Continues To Prevail in Markets—Buying Is Only in Small Lots

FERROALLOY PRICES, PAGE 240

Pittsburgh, Jan. 24.—A West Virginia steel company is understood to have closed upon approximately 300 tons of ferromanganese at $62, Pittsburgh, recently which continues to be the minimum of the market although most American producers are quoting $58.35, Baltimore base. The American Steel Foundries, Chicago, now is asking for prices on 300 tons.

Ferrosilicon continues to move mostly in small lots. A West Virginia user is reported to have closed upon 100 tons at $54.50, delivered, recently while an Alliance, O., user bought a similar amount paying $56, delivered. Prices below $55, delivered appear to apply upon foreign material. A carload of the 50 per cent grade, domestic, went to a Pittsburgh district steel foundry within the past week at the $55 level.

So far as reported the Michigan automobile builder recently inquiring for 4000 pounds of ferrovanadium, has not closed.

No new inquiries have been issued on spiegeleisen, although shipments on orders booked some time ago are fairly heavy. Stocks in hands of producers are limited but the present market contains no incentive to start up furnaces. The market continues quotable at $25 to $26, according to grade.

The $58.35 Price Maintained

New York, Jan. 24.—The market for ferromanganese was featureless in this district in the past week. The price is unchanged at $58.35 tidewater. Spiegeleisen continues to reflect some activity, several hundred tons of this metal being sold in the past week at $26 furnace for the 20 per cent grade. This figure is the minimum.

Cast Pipe Demand

Appears Slowly—Steel Grades Are Quiet—Prices Firm

PIPE PRICES, PAGE 240 AND 296

Chicago, Jan. 24.—Although large inquiry for cast iron pipe is a practical certainty, it is coming out slowly and at present most inquiries are for small tonnages with the larger lots still in the future. Prices are firmer and less tendency exists to shade the market. The United States Cast Iron Pipe & Foundry Co. is low bidder on 1350 tons at Chicago and 800 tons at Rockford, Ill. The National Cast Iron Pipe Co. has taken 300 tons at Lawrence, Kans., and 300 tons at Hoxie, Kans. Bids on 300 tons are under consideration at Wausau, Wis. Toledo will ask for bids shortly on 1500 tons. Milwaukee will open bids Feb. 16 on 1500 to 2000 tons. Other pending business includes the following: Jan. 28, Grand Rapids, Mich., 800 tons; Jan. 30, St. Paul, 1300 tons; Jan. 24, Madison, S. Dak., 700 tons; Jan. 23, Lost Nation, Iowa, 200 tons; Jan. 25, Woodward, Iowa, 100 tons; Feb. 4, Brook Park, Ohio, 300 tons. Inquiry from contractors and industrial buyers is good and considerable tonnage is expected from that source.

Need Pipe for Tunnel

New York, Jan. 24.—The biggest job in the steel pipe market here involves 815 tons for the New York-New Jersey vehicular tunnel. Most of this tonnage is required in constructing the tunnel and only a limited tonnage will go into the tunnel itself. The merchant pipe demand was better in the past week than for more than a month. Pipe prices are unchanged and the market is firm.

Demand for cast iron pipe is confined largely to private account, municipal inquiry being dull. No large tonnages are included, but the aggregate is fair. Prices are steady.

Operations on High Plane

Pittsburgh, Jan. 24.—Comparative quietness prevails in the tubular goods market in this district this week although pipe mill operations continue on a fairly high plane, 65 to 70 per cent of capacity. Present demand for line pipe is practically nil and no inquiries are reported current in the trade. Casing for the West is fairly active as is standard merchant pipe in a limited way with jobbers maintaining well balanced stocks. The trade observes that the discounts on Dec. 15 are being adhered to generally.

Few Lettings Reported

Birmingham, Ala., Jan. 23.—The high pressure pipe trade has not yet started in with much improvement. Some pig iron is being melted by these interests, however, but the tonnage of finished product being shipped from this district is not great.

Valley Operations

Continue Improvement, Showing 5 Per Cent Gain Over Previous Week

Youngstown, O., Jan. 24.—For the fourth consecutive week sheet mill operations show an increase. The rate at the beginning of this week was 43 per cent of capacity, a gain of 5 per cent over that of a week ago and 17 per cent since Jan. 3. In addition, every maker in the valley is operating either full or partially. The Newton Steel Co. has 10 mills under power; the Brier Hill Steel Co., five sheet and four jobbing mills; the Youngstwo Sheet & Tube Co., eight; the Falcon Steel Co. and the Sharon Steel Hoop Co., five each; and the Republic Iron & Steel Co., the Mahoning Valley Steel Co. and the Trumbull Steel Co., four each, a total of 59 of the 113 units in this district.

With the resumption of two additional open hearths over the total furnaces operated by independent companies last week, the present rate of steelmaking stands at 55 per cent, an increase of 4 per cent. Represented in this week's schedule are the Republic Iron & Steel Co. and the Youngstown Sheet & Tube Co. with eight furnaces each, the Brier Hill Steel Co. with six, and the Trumbull Steel Co. and the Sharon Steel Hoop Co. with three each, or a total of 28 of the 51 independent units established in the valley.

Of the four plate mills in this district three are rolling this week, there being the 84-inch and the 132-inch sheared units at the Brier Hill Steel Co. and the 90-inch sheared unit at the Republic Iron & Steel Co. In ad-

dition to the foregoing operations the Trumbull Steel Co. has 19 hot tin mills and 80 per cent of its strip capacity engaged. Ten of the 17 pipe mills are rolling, three at the Republic Iron & Steel Co. and seven at the Youngstown Sheet & Tube Co. The Republic company also is operating two skelp mills and is planning to start a bar mill later in the week.

Old Officers Retained in Reorganized Company

Included in the list of officials of the reorganized Central Steel Co. is the name of F. J. Griffiths as first vice president and general manager. Mr. Griffiths recently announced his resignation from the Central Steel Co. but the information contained in the statement that Mr. Griffiths would be first vice president and general manager in the new organization was confirmed Saturday. R. E. Bebb will be president of the company and chairman of the board of directors and C. E. Stuart, secretary and treasurer.

Increase Work at Mines

Cleveland, Jan. 24.—M. A. Hanna & Co., have been increasing their operations at underground mines in the Lake Superior district until the rate is nearly normal for the time of year. A slight increase is discerned generally, due to the efforts of mining companies to provide employment. In the Ironwood district in Michigan several hundred idle miners were reported last week to have made an appeal to public officials for food and clothing. A temperature of 30 degrees below zero has added to the distress in Minnesota mining towns.

Output Gains 2 Per Cent

Chicago, Jan. 24.—Mills of the Illinois Steel Co. have increased production from about 35 to about 37 per cent capacity over last week. The rail mill at Gary still is idle but will be put in commission next week, which will restore the rate of operation to a point between 45 and 50 per cent of capacity. Inland Steel Co. continues steadily at 40 to 45 per cent capacity, with its sheet mills entirely engaged. Other mills are running fairly steadily at varying capacities, although the general tendency is upward.

To Make Special Pipe

The East Jersey Pipe Co., and the Riter-Conley Co., have entered into an agreement by which a special type of steel pipe which has been exclusively controlled by the East Jersey Pipe Co., since its introduction into this country in 1905, will be fabricated in the Pittsburgh district by the Riter-Conley Co. at its Leetsdale plant. The East Jersey Pipe Co. will continue to fabricate this type of pipe in its shops at Paterson, N. J., and the new arrangement has been made due to the fact that it will permit considerable saving in freight rates and economy in manufacturing. The sale of the pipe will continue to be exclusively in the hands of the East Jersey Pipe Co.

Says Labor Troubles Can Be Adjudicated

Pittsburgh, Jan. 24.—Adjudication of industrial disputes instead of their arbitration was recommended by Governor H. J. Allen of Kansas at the forty-third annual banquet of the Engineers' Society of Western Pennsylvania held at the William Penn hotel last night, attended by more than 600 members and guests. In discussing the "Responsibility of the State for Industrial Relations," Governor Allen described the Kansas industrial relations court and stated that in the two years of its life, 38 out of 40 cases brought before it, have been settled amicably and acceptable to both capital and labor. He said he is not opposed to labor unions and pointed out that 75 per cent of the court's decisions were in favor of labor notwithstanding the fact that all opposition against it had originated with labor leaders, 150,000 of whom draw annually approximately $60,000,000 from the pockets of American workmen. Stating that progress of humanity has been due to betterments of labor and labor conditions, Governor Allen said:

"No peace can exist between employes and employers until an honest day's work brings an honest day's pay and an honest day's pay brings an honest day's work. This cannot be brought about so long as labor secretaries of war, its so-called leaders, are the controlling factors. The state has the right to protect the public against strikes and the Kansas law has been written upon the old principle that the safety of the public should be the supreme law. The Kansas industrial court does not take away the man's rights to quit work; but it holds that the right to work is as sacred as the right to loaf and that no combination of capital or of labor should be allowed to bring economic pressure to bear in an essential industry relating to food, fuel, clothing and transportation."

E. A. S. Clarke, president of the Consolidated Steel Corp., New York read a paper upon "Foreign Trade." He stated that the whole world is one great market awaiting development and while at the present time there does not seem to be enough business from domestic sources to keep mills and men active, methods, financial and otherwise will be found to revive export trade so as to make it pay real dividends.

E. J. Cattell, statistician of Philadelphia, entertained with humorous anecdotes. George S. Davison, president of the Gulf Refining Co. was toastmaster, and the recently elected president of the Engineers society, Henry D. James, control engineer of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., presided.

Quits La Belle Position

G. B. LeVan has resigned as vice president and general manager of La Belle Iron Works. Steubenville, O., a subsidiary of the Wheeling Steel Corp., Wheeling, W. Va. Mr. Levan will spend several months with his family in Florida. His future plans have not been announced.

Tin Plate

Operations Are at 65 Per Cent—Shipments Unabated—Price Unchanged

TIN PLATE PRICES, PAGE 240

Pittsburgh, Jan. 24.—While new business in tin plate is limited somewhat, as reported by some of the large producers in this territory, others claim a steady influx of orders for relatively small amounts. Shipments, however, continue unabated since some of the larger makers still have crowded order books and rolling schedules continue uninterruptedly on these and on specifications received from time to time on requirement contracts.

The American Sheet & Tin Plate Co. continues to keep slightly less than 90 per cent of its tin mills engaged; the McKeesport Tin Plate Co. this week added two more hot mills making 22 out of 44 active; an independent steel producer continues to operate its tin mills on the basis of 80 per cent, and the general average of independent tin plate makers would perhaps be above 65 per cent for the present week. Most of the present demand comes from can makers and the price of $4.75 per base box of 100 pounds, Pittsburgh, continues to represent the market.

Will Waive Extras

Philadelphia, Jan. 24.—Tin plate demand in this district has broadened out considerably. It is comprised mainly of spot buying at the usual price of $4.75 per base box, Pittsburgh. Although the usual differentials are allowed on large lots there is a disposition to waive the extras and in some cases it is arousing some concern. In exceptional cases, orders have been taken for primes only and the usual 10-cent extra for all primes has been waived.

Slight Decrease Noted in Steel Employment

One hundred and twenty establishments in the iron and steel industry reported 124,871 persons on their payrolls in December, as compared with 125,103 in November, 1921, according to the bureau of labor statistics, department of labor. The number employed in December, 1920, by 121 establishments was 177,016, and the same establishments reported 125,195 as employed in December, 1921. In commenting on the iron and steel industry, the bureau's report states:

"One establishment in December made a wage rate reduction of 20 per cent to 12 per cent of the employes. Two mills reported a decrease of 10 per cent in rates of wages, which affected all employes in one mill and 15 per cent of the employes in the second mill. A decrease of 8 per cent was made by one firm to 14 per cent of the force. Comparing November and December figures, an increase of 5.2 per cent in per capita earnings was noted, as employment conditions in this industry were gradually improving."

Tunnel Contracts Involve Many Products

New York, Jan. 24.—Bids on the construction of the river sections of the proposed vehicular tunnel under the Hudson river, to connect the island of Manhattan and Jersey City, now are being formulated by a number of leading construction companies to be opened jointly by the New York state bridge and tunnel commission and the New Jersey interstate bridge and tunnel commission, Feb. 7, at their headquarters, the Hall of Records, 31 Chambers street, New York. C. M. Holland, Room 614, Hall of Records, is chief engineer for the two commissions, and his assistant, Mr. Davis, is in charge of details. Bids now being taken are for contracts Nos. 3 and 4, which involve the construction of the heavier sections of the two shafts. Contract No. 3 involves the work on the New York side and contract No. 4 that on the New Jersey side. The requirements include about 115,000 tons of cast iron segments; a huge amount of concrete for lining the tunnel; 547 tons of concrete reinforcing bars and a considerable quantity of steel wire mesh for reinforcing the concrete; 1490 tons of special shapes; and a large tonnage of No. 20 gage black sheets along the tops and bottoms of the shafts to serve as ventilating ducts. For driving the tunnels, four shields, each requiring about 60 tons of plates, or a total of 240 tons, will be required and 815 tons of pipe will be needed, mostly in the construction work. Specifications may be had at the office of Mr. Holland at $5 for each contract. Following is the list of companies which are bidding on the work and this list is of particular interest in view of the fact that the contractors will place orders for all of the material involved in the execution of their contracts:

Contractor	Address
G. & F. Blum Corp.	347 Madison avenue, New York.
P. McGovern, Inc.	50 East Forty-second street, New York.
Foundation Co.	120 Liberty street, New York.
Fred E. Cranford, Inc.	149 Remson street, Brooklyn, N. Y.
Booth & Flinn, Ltd.	17 Battery place, New York.
Holbrook, Cabot & Rollins Corp.	52 Vanderbilt avenue, New York.
Keystone State Construction Co.	210 So. Thirteenth street, Philadelphia.
Paul G. Brown	17 West Forty-second street, New York.
S. Pearson & Sons, Inc.	Broadway and Chambers street, New York.
Shaft Construction Co.	233 Broadway, New York.
Rollin Construction Corp.	90 West street, New York.
T. A. Gillespie Co.	7 Dey street, New York.
Dock Contractor Co.	95 River street, Hoboken, N. Y.
O'Rourke Eng. & Construction Co.	17 Battery place, New York.
Forschner Contracting Co.	125th street, Chicago.
Spencer, White & Prentiss	100 West Forty-first street, New York.
Cement Gun Construction Co.	Keystone Bank building, Pittsburgh.
Thos. Crimmins Contr. Co.	126 West Fifty-ninth street, New York.

One contract in connection with the proposed vehicular tunnel was let and executed some time ago. This involved the construction of the New York land shaft. A number of contracts remain to be advertised later. These involve the subway section in New York, the approach sections in New Jersey, the construction of ventilating houses over the shafts and the furnishing and installation of the ventilating, electrical and other equipment. A large tonnage of reinforcing bars, pipe and structural steel, as well as cast iron and wrought pipe will be required in the construction of the subway section in New York and the approach sections in New Jersey.

President Urged To Name Transportation Chief

Washington, Jan. 24.—The railroad committee of the Chamber of Commerce of the United States recommends the creation of a commissioner general of transportation, to be appointed by the President, and to be representative of shippers in all rate and other matters affecting the shippers. The commissioner also would co-ordinate administration laws regulating commerce, harmonize regulations affecting shippers and work for the consolidation of the carriers into big groups.

This recommendation is in line with the belief of Secretary Hoover that shippers need a federal officer to make their interests his primary duty. Mr. Hoover states that investigation shows railroad inventories are exceedingly low. He sees the carriers coming into the market for equipment and supplies, and this as a big factor in the business upturn.

The trade commission today selected John W. Bennett, formerly in the commission's Chicago office, to be examiner in the basing point hearing opening Monday in Milwaukee.

Gross Is Lowest

The annual report of the Dominion Bridge Co., Ltd., Montreal, shows that gross profits in 1921 were the lowest in the company's history amounting to $623,737 as against $1,125,892 in 1920. Net earnings for the year, after deduction of depreciation and reserve for doubtful accounts, amounts to $378,693, which compares with $964,530 for 1920. The company's output for 1921 was 38,317 tons against 50,778 tons for 1920. The report shows current assets of $4,862,146, current liabilities of $692,688 and working capital of $4,169,457. Total assets stand at $11,453,390.

Corporation's Right in Canal Case Reaffirmed

Washington, Jan. 24.—A second victory for the United States Steel Corp., in the action involving its right to operate steamers of the United States Steel Products Co. through the Panama canal has been forecast by the tentative report of Examiner Burton Fuller of the interstate commerce commission in the reopened Steel Products case. The tentative report recommends that the commission reaffirm its decision in the original case, that the railroad subsidiaries of the Steel corporation do not and may not compete with the ships of the products company operating through the canal.

On Feb. 10, 1920, the corporation, its subsidiary railroads, the Union railroad, the Elgin, Joliet & Eastern and the Bessemer & Lake Erie, and the products company filed a joint application with the commission asking determination of whether the operation by the products company of its steamship lines through the canal was in contravention of section 5 of the interstate commerce act, as amended by section 11 of the Panama canal act. The commission at that time found no violation, but left the matter open for future consideration "as might be disclosed on some subsequent record, in the light of experience and further development." On June 22, 1921 the commission reopened the case, and today's tentative report is the answer.

The products company now operates nine steamers through the canal under the registered name of the Isthmian Steamship Lines.

Thread Committees Named

Washington, Jan. 24.—In anticipation of favorable action in the senate on the Tilson joint resolution extending its life five years, the national screw thread commission has designated two subcommittees to develop programs tentatively laid down some time ago. One subcommittee, it was decided at a recent meeting of the commission, will work on the standardziation of bolt heads, nuts and screw heads and ultimately will take up the standardization of wrenches. Another subcommittee will go into the question of tap drill sizes and sizes for automatic screw machine stock. In about a month another commission meeting will be called by the chairman, Dr. S. W. Stratton, director of the bureau of standards. The Tilson resolution has been passed by the house and in the senate has been referred to the committee on manufactures.

China Buys

500 Tons of Bars—Intercoastal Rates on Tin Plate Cut

Seattle, Jan. 18.—While no noticeable volume of business has developed in the iron and steel trade in this territory, conditions are improving. Activity in the logging and lumbering industries is giving the foundries new business and industrial plants also are reopening. The same conditions are helping jobbers who report that the month opened up with an encouraging amount of business. Many substantial building and improvement projects are in view and with lowered freight rates from the East a buying movement is anticipated in the near future.

Pig Iron and Coke

Continental iron, with 3 per cent and over of silicon and 1 per cent and over of manganese is selling here at $31. One company has 400 tons to arrive during February and some March orders have been booked. The trade, however, is not inclined to purchase more than 60 days in advance. The demand has been fairly satisfactory showing improvement over 60 days back. One local company has sold about 500 tons during the last week and with foundries reopening the future looks more hopeful.

The coke market is unchanged. A fair tonnage of coke is being sold. The shipment of 500 tons of Connellsville has not yet arrived and it is being offered here at around $20. A quantity of the tonnage has been sold.

Bars, Plates and Shapes

Demand for bars has improved and there is some foreign inquiry. The Pacific Coast Steel Co. has reduced the prices of bars from 2.75c to 2.50c in line with eastern competition which now is getting the benefit of reduced water rates. One company has placed several small tonnages for export to China including one lot of 500 tons of bars. With building fairly active the demand for reinforcing steel continues in fair volume.

Other Finished Products

While salmon canneries have placed their season's orders for tin plate, other plants still are undecided what the year's plans will be. These companies are expected to buy in small lots shortly as it is generally conceded that more tin plate will be purchased soon. The intercoastal lines have announced a further reduction in the water freight on strapped packages of tin plate, it now being 50c per 100 pounds. Until Jan. 1 the rate was 75c and since then it has been 60c. This gives the water lines an advantage of from 32 to 35c over the rail lines. Inasmuch as water shipments have been found satisfactory much of this business has been diverted from the railroads.

Warehouse Market

Jobbers report a fair volume of business mostly with the lumber mills and logging camps. During the week a further adjustment of warehouse prices has been made, tank plate being cut from 3.60c to 3.50 while black and galvanized sheets were reduced 25c the new prices being, black, 5.70c and galvanized 6.70c. Blue annealed cut from 3.60c to 3.50c while black were cut 75c from 5.25c to 4.50c. There reductions were made effective in time with the new water rates.

Old Material

While only small tonnages are moving in this market, dealers report increased interest indicating better business in the near future. Foundries and mills are buying in odd lots No. 1 cast-iron scrap having sold at around $17 while steel scrap is worth from $6 to $7. A few inquiries from China and Japan are being received but little business has been confirmed. Japan is in the market for brass and other scrap. However, local scrap exporters are expecting better prices and in the meantime they are not anxious to do business at the prices being offered by Oriental buyers.

The Pacific Coast Steel Co. is operating its local plant at about 50 per cent of capacity this month one open-hearth furnace and one finishing mill being in service. Both the domestic and export outlook is reported improved and a greater volume of business is expected as the year advances.

Will Roll Bars

The Foley Steel Co., Harrison building, Philadelphia, recently organized by Peter R. Foley, formerly general manager of sales of Eastern Steel Co., and J. H. Pritchard, formerly rolling mill superintendent for the Republic Iron & Steel Co., and later the Tennessee Coal, Iron & Railroad Co., has leased from Robert Grant, Woolworth building, New York, the Slatington Rolling Mills, Slatington, Pa. The company will manufacture steel and iron bars from ⅜ to 3 inches in rounds and from ¾ to 6 inches wide in flats. It will produce plain and deformed concrete reinforcing bars. It also will specialize on small steel shapes, low phosphorus muck bar and staybolt iron. Robert Grant will continue to sell products of the Slatington Roling Mills but will not have the exclusive agency.

Expect Building Work

Washington, Jan. 24.—In forecasting the building outlook for 1922 the committee on statistics and standards of the chamber of commerce of the United States looks for the greatest activity in the industrial states. The outlook for construction in agricultural districts is not favorable. As to individual states, California leads in probable construction, with "good likelihoods of construction in the Central West and in the East."

Convention Changed

American Foundrymen's Association Will Meet in Rochester, N. Y., June 5-9

Final arrangements have been made for holding the annual convention and exhibit of the American Foundrymen's association and allied societies in Rochester, N. Y., during the week of June 5-9, instead of in Cleveland as announced previously. This decision, just announced by C. E. Hoyt, secretary of the association, was reached following conferences on Jan. 18 and 19 with Mayor Kohler of Cleveland, at which time it was learned that due to the incomplete condition of the municipal auditorium, uncertainty as to when it would be open to the public, and the manner in which it would be operated, it would be impossible for the city to give a lease for any specific date in 1922. Because of these agreements, the present administration refused to honor the agreements which the previous administration had entered into with the Foundrymen's association.

Rochester previously had extended an invitation for this year's meeting and with the invitation promptly reaffirmed, that city was made the unanimous choice of the convention and exhibits committee and the board. All the activities of the association will be centered at Exposition Park, a million dollar show place located 1½ miles from the city. Comfortable and commodious assembly rooms for general and auxiliary meetings are available, while buildings No. 3, 4 and 5, all directly connected, afford better accommodations for all classes of exhibits than have been found in any city where exhibits have been held it is understood.

Geographical location of Rochester is good, the city being but a night's ride from all points in New England and the Chicago, Cincinnati and Washington districts and convenient to points in Canada either by rail or boat from Coburg, Ont., thus it will be a central meeting point for the foundrymen of the east, west, north and south. Rochester would have been first choice for two previous fall conventions had a greater number of hotel rooms been available. For a June meeting, however, guarantees have been increased so that members and guests will be accommodated comfortably. A plan is being worked out for handling all reservations through a hotel committee, to which each hotel has pledged a quota of rooms. Reservation application blanks with complete information will be issued as soon as the committee is organized to provide for hotel accomodations.

Export Trade Grows Moderately

Increase in Sales to Orient Result in Ocean Freight Rate Advance—Japan Now Buying Rods in Addition to Sheets, Tin Plate and Wire—Inquires for 10,000 Kegs of Nails—Mexico Wants 10,000 Cars

NEW YORK, Jan. 24.—Sales to the Orient have been maintained throughout January at a level which has surprised exporters here, as normally at this time of the year business becomes slack. It is true that no order of outstanding importance has been reported within the past week, yet the constant and continued purchases of sheets, tin plate, nails, and wire makes the total large. One agency estimates that Japan alone is now buying black sheets in the United States at the rate of 10,000 tons a month. These orders are in the hands of many exporters. One explanation of the continuation of the tin plate purchases, aside from the fact that the American price more nearly meets the competition of Welsh tin plate in the Orient, is reputed to be due to the better grade of American tin plate.

This trade with the Orient has become so important, iron and steel sales leading the sales of all other American commodities, that the steamship companies are planning to re-establish the rate conference. The conference has, as a matter of fact, already been re-established and the rates on iron and steel products have been advanced approximatey $2 a ton on the c.i.f. price. American steel for export is now selling at about the bottom figure and the leading exporters are unable to see how they can absorb the $2 a ton increase in the ocean freight rate. Consequently numerous cables were said to have gone out last week to clients in the Orient withdrawing c.i.f. quotations. It is still too early to say whether or not the purchasers in the Orient will be willing to have the price advanced $2 a ton, in consequence, but the sellers here believe that they may obtain it because those purchasers are pushing for quick deliveries, and from no other producers in the world can they obtain quicker delivery than from the producers of the United States.

Revise Steamship Rates

From New York to the Orient, the re-established steamship conference decrees that the rate shall be $10 a ton weight on naked iron or steel, and the same rate will apply to tin plate. On copper and on automobiles the rate will be $12, weight or measurement, and the same rate will apply to machinery. On zinc sheets the rate will be $18 a ton, weight or measurement. The steamship companies are endeavoring to keep the rates not too far above the rates applicable on similar commodities from Europe to the Far East.

Japan Buys Wire Rods

The Orient is not only buying tin plate, sheets, wire and nails of the United States, but during the past week Japan purchased 2000 tons of wire rods. One lot alone was for 1100 tons. This marks a further broadening of the export market and is another indication of the extent to which American export prices have fallen to a competitive basis with European producers. The price at which wire rods can be purchased for export was not revealed and other details regarding this particular transaction were withheld. But the differential on wire and nails for export has been rather definitely fixed. Plain galvanized wire is being purchased for export for $2.60, mill base, and barbed wire is had for $3, mill base. These figures represent a reduction of approximately 15 cents from the price demanded in the domestic market. Nails for export are quoted at $2.25 a keg, mill base, for export, and some exporters have actually purchased nails as low as $2.15 a keg, whereas the domestic price is quoted at $2.50 a keg. Within the past week the export houses found that the nail price had stiffened up to $2.25 a keg. This, however, is a variable matter as the price varies with the assortment of grades of nails included in an inquiry.

Japan has been inquiring for 10,000 kegs of nails. It is said that quotations have already been submitted to the Japanese principals on this inquiry but no business has as yet developed on it. That was the largest nail inquiry received in this market for about a year. An independent house holds a Japanese inquiry for 2000 kegs of nails, whereas a Japanese trader is inquiring direct for approximately 1000 kegs of wire nails.

Japan purchased 10,000 tons of sheets last month through independent houses, and one independent exporter on one day last week received from Japan orders for 700 tons of material, consisting chiefly of sheets and bars. There is also in the market a Japanese inquiry for 500 tons of steel bars. One independent agency is holding a Japanese inquiry for 3000 base boxes of tin plate. Another has a Japanese inquiry for 4000 base boxes of charcoal tin plate and for 1000 base boxes of coke tin plate.

China is buying wire short and plate clippings chiefly. There is now in the market an inquiry from China for 300 tons of steel bars. Australia is inquiring for 200 tons of wire, consisting of both plain and barbed.

Conditions in the Latin American countries appear to be improved somewhat and business is beginning to develop. Among the inquiries noted last week was one from Argentina for 450 tons of corrugated sheets. This is a staple commodity of which we have sold great quantities to Argentina in the past.

According to reports from our consul at Rosario, plans have been approved by the national government of Argentina for the construction of a building for the national secondary school at Santa Fe, and 300,000 paper pesos have been set aside for beginning the work. The president has approved plans and estimates for the construction of a building for the industrial school at Rosario, the initial appropriation being 503,000 pesos. The minister of public works has approved the plans and estimates for the construction of a bridge across the Chico river at the city of Jujuy, the cost being estimated at 152,408 pesos. As is well known, it is practically impossible for a foreigner to compete for these jobs unless he has a representative in the field who has authority to negotiate and submit bids

From Mexico it is learned that an inquiry has developed for machine tools to equip repair shops. It is estimated that approximately $360,000 worth of tools are wanted. It is also learned that the national railways of Mexico are negotiating for 10,000 freight cars. These are designed for the narrow gage railways of the Mexican national system.

Offers Atlanta Surplus

Washington, Jan. 24.—Fair-sized quantities of metals, hardware and metal-working machines are included in material to be auctioned by the war department at Atlanta, Ga., on Feb. 6. Much surplus property of the department is to be offered at auction sales in March, April and May, most of it, however, in comparatively small quantities.

Rail Prices Reduced in Britain

British Billets, Plates, Shapes and Sheets Also Lower—Lorraine Manufacturers Book 40,000 Tons of Rails for France—Welsh Works Take 5000 Electrical Transmission Towers for Export—Price Liquidation Continues in Europe

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Jan. 23.—Price liquidation continues everywhere. Europe, except Austria, is dominated by exchange weakness. In France the internal demand is slightly better.

Lorraine producers have taken 40,000 tons of rails for French railroads at 450 francs ($36.18) per ton, mill. British manufacturers have reduced the price of rails to £7 10s ($31.64). British billets, plates, shapes and sheets

Sterling—$4.22

also are lower. About 15,000 tons of pig iron are on inquiry in northern centers. Better sales of exports are reported, especially in Middlesbrough, where two more stacks have been blown in. Ferroalloys are firmer.

Welsh works have taken 5000 electrical transmission towers for export. Belgium has purchased 2000 tons of Scotch billets at £7 ($29.54) mill. Considerable inquiry from the continent is in the British market. Three hundred, forty-two tin mills are operating. The market for tin plate is dull. India and South America are buying sheets.

Average export billings as shown by custom house invoices in December were as follows: Foundry iron £7 1s ($30.38); ferromanganese, £14 9s 6d ($61.07); plates, £15 12s ($65.82); tin plate, £23 ($97.06); galvanized sheets, £27 7s ($115.41); carbon billets, £12 15s ($53.79).

Competition from Continent Growing Weaker

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

BIRMINGHAM, Eng., Jan. 12.—It is still difficult to forecast iron and steel trade developments, as business is not yet actually moving. Sentiment is better and the trend of opinion seems to be that the elements of improvement will extend. A rather hopeful sign is that orders for hematite pig iron in Cleveland have increased, the furnaces now operating being fairly assured of continuous work. It is expected in that district that other furnaces will be started. In the Barrow district only one furnace is in blast, but two others are to start this week, simultaneously with a steel plant. Those works have enough orders on hand for about two months, and another furnace is to be started at Millom.

It is generally expected that iron prices will be further reduced. A little more work is being done at the iron ore mines on the West Coast.

The Federation of British Industries a very large and influential body has decided to make another appeal to the railroad companies for further rate reductions.

The more hopeful tone appears to be based upon a variety of circumstances. Prices are now near a business basis, although further reductions are considered likely. The foreign mails have been more encouraging lately, some Birmingham merchants having had more inquiries in the last fortnight than for several months, and this appears to

Sterling $4.19

be a common experience in London.

Continental competition here has weakened a great deal. Isolated quotations are coming in, Belgian joists being offered at £7 15s ($37.28) Antwerp, equal to £9 7s 6d ($39.51), Birmingham. The steel could be laid down in London for £8 15s ($36.65), and this is giving the London engineers a decided advantage against those of Birmingham and the Midlands, where similar English material would cost £10 10s ($43.99). Belgian bars could be bought for £9 10s ($39.81) here, as against £10 ($41.90), the English price.

Steel of German origin is not always easy to identify, but one definite German quotation offers universal plates on the basis of £7 17s 6d ($37.79) Antwerp for lots of 50 to 100 tons. The plates are 6 to 48 inches wide and the thickness from ¼ inch upward. They are rather difficult to get in this country, and the price is attractive. English engineers undoubtedly have more confidence in German than in French or Belgian steel, accuracy and finish being superior. These plates could be shipped to Birmingham at £9 12s 6d ($40.56) against £10 10s ($43.99) for the English material. It is thought such offers will meet with a quick response from engineers and other consumers on the coast.

Foreign pig iron is a great deal less in evidence and orders are being accepted only for short periods, sellers being cautious as to price. There is some encouragement in the north of England over the fact that the shipments of pig iron during December were by far the best of the year totalling 18,931 tons. The total exports for the year were 123,181 tons, as compared with 1,246,884 tons in 1913.

Real price concessions in pig iron are noted chiefly in the Midland area, particularly at Northampton and Derbyshire where foundry iron can be bought at prices ranging between £4 10s ($18.86) and £4 12s 6d ($19.36) at the furnaces. Even these prices would be shaded for a good tonnage.

The general expectation of a fall in steel prices has not been realized, though this may be due to the fact that business is not yet taken seriously. A large Staffordshire steel firm has reduced its quotations for billets from £8 ($33.52) to £7 15s ($37.28). This was caused by the keen rivalry between the various British steelmakers some of whom are still asking £8 ($33.52). For semifinished steel continental prices are remarkably close to those of Great Britain. English wire rods, for example can be bought at £11 10s ($48.19) while Belgian prices range from this figure to £11 15s ($49.24).

The old rivalry between iron and steel which was little heard of during the war has been revived with energy. For a time wrought iron was preferred for the underframes of railway wagons.

Current Iron and Steel Prices of Europe

British Market

Corrected to Date by Cable

Home Market Prices. Gross Tons at Works or Furnace.

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	29.01	6 17 6
Sheet bars	29.54	7 0 0
Wire rods	42.20	10 0 0
FINISHED STEEL		
Steel bars, England, ½ to 3-inch	42.20	10 0 0
Ship, bridge and tank plates, England	37.98	9 0 0
Ship, bridge and tank plates, Scotland	36.93	8 15 0
Beams, England	34.87	8 10 0
Beams, Scotland	39.04	9 5 0
Sheets, black, 24 gage	47.48	11 5 0
Sheets, galvanized, 24 gage	67.52	16 0 0
Rails, 60 lbs. and over	31.65	7 10 0
Tin plate, base box, 108 lbs.	4.01	0 19 0
Steel hoops	48.53	11 10 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	20.05	4 15 0
Hematite, West Coast, Mixed Numbers	22.16	5 5 0
Middlesbrough Basic	21.10	5 0 0
No. 3 Foundry, Middlesbrough	18.99	4 10 0
No. 3 Foundry, Derby, Leicester, Nottingham	17.94	4 5 0
No. 3 Foundry, Northamptonshire	17.94	4 5 0
No. 3 Foundry, Staffordshire	19.52	4 12 6
No. 3 Foundry, Scotch	22.66	5 5 0
Ferromanganese, 76 to 80 per cent	63.30	15 0 0
COKE		
Yorkshire furnace	3.80	0 18 0
Yorkshire foundry	6.33	1 10 0

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	32.16	400
Basic Bessemer, Lorraine	18.09	225
Foundry, Longwy, No. 3, sand-cast	16.08	200
Foundry, Longwy, No. 3, chill-cast	17.29	215
Foundry, Longwy, No. 2, sand-cast	17.69	220
Foundry, Longwy, No. 2, chill-cast	18.49	230
Ferromanganese, 76 to 80 per cent	75.98	945
COKE		
French furnace	8.04	100
German, Belgian and British furnace	5.23	65
French foundry	10.45	130
SEMIFINISHED STEEL		
Blooms	27.74	345
Billets	29.51	367
Sheet bars	31.36	390
FINISHED STEEL		
Steel rails	40.20	500
Merchant bars	36.18	450
Angles	38.19	475
Normal beams and profiles	38.19	475

*F.o.b. cars at frontier.

	$	Francs per metric ton (2205 lbs.)
Plates, ship and tank, 10 millimeters and thicker	53.06	660
Plates, bridge and tank, 5 to 10 millimeters	57.08	710
Sheets, black, 3 millimeters	64.32	800
Sheets, blue annealed, 2 millimeters	84.42	1050
Shafting, cold-drawn, 40 to 60 millimeters	64.32	800
Bars, 2 per cent nickel steel	112.56	1400

All prices are f.o.b. furnace or work.

All prices are f.o.b. furnace or work.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	18.58	240
Basic open-hearth, Belgian	18.58	240
Gray forge, Belgian	17.42	225
Foundry, No. 3, Belgian	18.58	240
Foundry, No. 3, Luxemburg	17.81	230
Foundry, No. 3, Lorraine	18.96	245
SEMIFINISHED STEEL		
Blooms	28.25	365
Billets	28.25	365
Sheet bars	32.12	415
Wire rods	42.57	550
FINISHED MATERIAL		
Standard rails	37.54	485
Merchant bars	34.83	450
Normal beams and profiles	32.51	420
Plates, 5 millimeters and thicker	40.64	525
Sheets, black, 3 millimeters	41.02	530
Sheets, galvanized, 1 millimeter	121.91	1575
Plain wire	54.18	700
Galvanized wire	65.79	850
Wire nails	42.57	550

All prices are f.o.b. furnace or works.

German Market

Prices Last Reported

	$	Marks per metric ton (2205 lbs.)
PIG IRON		
Hematite, Oberhausen	18.68	3891
Foundry, No. 3, Oberhausen	16.08	3350
Bessemer Stahleisen, Siegen	15.96	3326
COKE		
Ruhr furnace coke	2.84	591
Ruhr foundry coke	2.95	614
SEMIFINISHED STEEL		
Billets	20.30	4230
Sheet bars	20.78	4330
Wire rods	20.78	4330
FINISHED STEEL		
Standard rails	24.00	5000
Merchant bars	24.14	5030
Structural shapes	26.40	5500
Ship plates	28.32	5900
Medium plates, 3 to 5 millimeters	37.44	7800
Sheets, below 3 millimeters	76.80	15,000
Tin plate	105.60	22,000
Plain wire	33.60	7000
Bands and strips	47.52	9900

All prices are f.o.b. furnace or mill.

But the price now is so widely different that iron has once more been relegated to the background. Similarly with tube; as steel skelp can be bought for £10 10s ($39.81) iron at £13 10s ($52.38) has no chance in competition. The tubeworks, however are not calling for much material.

The strenuous character of competition is imposing a severe test on the various associations. The Staffordshire ironmasters met in Birmingham recently to consider the situation which has developed through ruthless underselling. Each reduction declared by the association has been promptly followed by cuts frequently of £1 ($4.19) made by unassociated houses. It is well known that for the past fortnight ordinary iron for which the nominal price is £13 ($39.47) has been sold as low as £12 ($50.28). The firms loyal to the association considered they were being victimized by their loyalty. Opinion was steadily in favor of a general reduction, but it was agreed that the iron cannot be made even for £13 ($54.47), and eventually the association decided against reduction. The Staffordshire ironworks are nearly all closed, the iron trade being almost ineffective against other districts and in the face of the formidable competition of steel.

It is officially anounced that the Eagle Tin Plate Works of Neath have been acquired by Baldwins, Ltd. The plant consists of nine mills, and has a production capacity of 6000 boxes per week. Tin plates are easier prices ranging from 19 shillings 3 pence ($4.00) to 19 shillings 9 pence ($4.13). The corrugated sheet trade is quiet with somwhat easier prices, the basis being about £16 10s ($69.13), with higher figures in the Midland district. The position both in the tin plate and galvanized sections is regarded with some confidence in view of the decided recovery in America, and the worldwide need for this material, which it is believed will make itself felt early in the year.

Discontinues Ship Sale

London, Jan. 12.—Under pressure from business men the British government has announced it will not con-

tinue the sale of British naval vessels to foreign buyers for breaking up. Recently about 400,000 tons of British cruisers, destroyers, etc., were sold to Dutch and German companies for this purpose at about 7 shillings ($1.47) per ton. Approximately, 200,000 tons of these ships were sold to Germany. For dismantling in British ports the admiralty has sold about 1,000,000 tons of ships, in the past two years it has been estimated.

Trade Almost at Standstill in Germany

European Special Correspondence

DUSSELDORF, Germany, Jan. 12.—New business has come almost to a standstill due to the uncertain political and business outlook. It is evident that the inflation of the mark has been overdone and the reactions from this inflation are becoming increasingly severe. All eyes in Germany are directed at present toward the conference at Cannes, although the business community is not expecting much relief from this gathering of statesmen and politicians.

A strike of nearly a week's duration has seriously disorganized freight traffic in the Rhine valley, and some blast furnaces have had to be damped down owing to insufficient coke and ore supplies. The railwaymen have now gone back to work but since their wages still remain materially below those paid by private employers it is not unlikely another strike may take place shortly.

Mark—0.005

Prices are generally being maintained although concessions are beginning to appear in the German market for the first time in many months. Scrap has declined 50 per cent, from 3000 to 2100 marks ($15 to $11.50) per metric ton.

Inland consumers of semifinished steel are complaining that material which they need to operate their plants is being shipped abroad. Wire rods are scarce and many wire drawing plants are operating at reduced capacity on account of the shortage of supplies. Billets remain at 5500 marks ($27.50), with bars at 6800 marks ($34). The latter price represents a concession of 400 marks from the recent peak. Thin sheets are 15,000 marks ($75), tin plate 22,000 marks ($110), and plain wire 7000 ($35) per metric ton.

Foreign ores are being urgently offered at low prices, best Bilbao rubio being 26 shillings per ton c.i.f. Rotterdam, for 50 per cent quality. Coke is scarce owing to increased supplies shipped to France resulting from pressure by the reparations commission. These deliveries are now 16,000 tons a day compared with 10,000 tons in December.

The pig iron syndicate has been renewed until 1926. The tonnage of orders allotted to each furnace hereafter will be regulated on the basis of actual production. The allotment for any succeeding three months will be based on the average rate of production for the preceding six months minus any self-consumed tonnage.

Canadian Mills Booking More Shapes

Special Correspondence

TORONTO, Ont., Jan. 23—Sales of Canadian pig iron continue to be confined to small tonnages for immediate delivery. While in many respects business in the iron and steel industry of Canada is beginning to show some improvement, the improvement has not been reflected in the pig iron market.

Demand for various lines of finished iron and steel is still showing some activity. Mills are increasing their booking of structural shapes. The principal buyers of the week were the jobbing warehouses as no large contract for buildings were awarded.

A steady though limited demand exists for bars, and although individual orders in the past week seldom exceeded 5 or 6 tons, local mill representatives are receiving inquiries which call for tonnages of a much greater volume. Bars are quoted at 2.60c, Toronto. The revival recently experienced in the shipbuilding industry is having a good effect on the demand for plates, and producers are not only receiving inquiries for these commodities but some large orders have been booked. Boiler and tank makers also are entering the market for additional supplies. Plates are quoted at 2.40c, Toronto.

No change appeared in the demand for sheets during the week. Both black and galvanized are in little demand at present, although the automotive industry is again sending out inquiries and some large orders are expected from this source. No. 28 black sheets are quoted at 4.10c, and galvanized at 5.15c, Toronto.

Foundries continue to buy and are the chief purchasers of scrap. They are continually taking in limited quantities of machinery cast for which dealers are offering from $15 to $16 per net ton, Toronto.

Vickers Report $2,275,000 Profit; Krupp's Less

London, Jan. 12.—At the annual meeting of Vickers Ltd., held in London, recently, it was stated that the net profits for the year ending June 30, 1921, were £541,260 12s 0d, or $2,275,000. In view of the uncertain outlook a dividend was paid only on the preferred stock, and £991,639 11s 0d or $4,116,000 was carried forward to reserve.

Vickers' report makes possible comparisons with the report of Fried Krupp, A. G., Essen, Germany, also just issued. Reduced to a dollar basis, Vickers' profits were as stated $2,275,000. On the same basis for the same period Krupp's profits were $585,000.

Referring to the Washington conference, Douglas Vickers, chairman of Vickers Ltd., made the following remarks at the annual meeting:

"We shall not be able to tell the full effect of the conference decisions until they are announced. It is not clear yet whether the four battle cruisers are entirely or only partly abandoned, or whether ships of somewhat different design may be substituted for them; nor is it clear whether our representatives have given up one of England's great advantages by assenting to the prohibition of the building of ships of war in private yards for foreign countries

"It appears evident, however, that the field for armament work will be much reduced, and that it will be impossible for the company to retain more than a small proportion of its large expert staff, or to continue to spend large sums, as of old, on development and experiment in this connection. Measures have, therefore, been taken to effect at once large reductions, and at the same time a part of the staff retained will be removed from London to Sheffield and Barrow, where it is thought they will be more easily employed in directions other than on armament work.

"The conditions brought about by the Washington conference are, from the point of view of the Vickers shareholders, another justification of the policy which led to the absorption of the British Westinghouse Co."

Voice Demand for Lower Rates

Representatives of Iron and Steel Industry Present United Front at Commerce Commission's Investigation—Removal of Entire 40 Per Cent Advance of 1920 Called for —General Reduction Not Expected by Observers at Hearing

WASHINGTON, Jan. 24.—Iron, steel and coke producers testifying before the interstate commerce commission's general rate investigation have presented a solid front on the proposition that present railroad freight rates are excessively high and must be reduced as a prerequisite to a revival in business. Pittsburgh, eastern Pennsylvania, Mahoning Valley and other eastern and interior interests, however, stressed the necessity for reducing ore, other furnace materials, semifinished and finished material. Chicago furnace interests subordinated all commodities to coal while Buffalo furnace interests, agreeing with the other lake front furnaces on the importance of a reduction in coal freight rates, injected the feud between the lake front and interior furnaces on ore rates. This division in the industry, while not illogical, was the one detraction from an otherwise forceful presentation of the iron and steel industry's case.

The great bulk of the testimony called for the removal of the entire 40 per cent increase effected in eastern territory on Aug. 26, 1920, by Ex Parte 74. Accompanying the attack was the promise that such a reduction would so stimulate business that the carriers' net would not be decreased. A dismal, but true, picture of the industry was painted; furnaces cold, steelworks down, employes idle, all because of the exorbitant rates.

While the industry's representatives marshaled their testimony in an almost unassailable fashion and the investigation will continue until the last week of February, it does not appear probable at this time that a general reduction in rates can be expected. The commission gives the impression of casting around for a basic commodity or two in the leading industries as the subject for rate cuts. Whatever reductions are ordered will be effective about April 1, certainly not before. The interest displayed by the commission in coal appears to foreshadow it as slated for a reduction, possibly one of 10 per cent. Last Friday was devoted to coal and coke, and Saturday and Monday to blast furnace materials and iron and steel. Every section of the country and of the industry was represented; every witness assailed rates and urged slashes, up to the complete elimination of the 1920 advance of 40 per cent.

W. R. Bean, president of the American Foundrymen's association, recommended the elimination of all of the 1920 rate increase on foundry iron, coal, coke and sand, claiming "the stimulus to business will place the carriers in a better financial position than will be the case if present rates are maintained."

P. C. Sprague, traffic manager, M. A. Hanna & Co., gave the commission exhaustive figures on the volume of iron ore traffic, but made no recommendations. S. L. Meyer, of the Hammond Iron Works, Warren, Pa., protested against rates on plates and shapes. He said a complaint asking for a 50 per cent reduction will be filed soon.

Richard Peters Jr., American Pig Iron association, asserted that all costs of pig iron production, except freights, have been reduced, and the markets have been greatly localized. He asked for the elimination of the advance made in 1920. A. S. Lucas and C. A. Bryan, representing the Birmingham district, made similar request, saying all costs are down to rock bottom, except freight rates.

John M. Gross, general traffic manager of the Bethlehem Steel Co., J. Fred Townsend, traffic manager of the National Tube Co., and J. P. Daly, traffic manager of the Donner Steel Co., Buffalo, and representative of all of the furnaces and mills of the Pittsburgh district also testified.

Consumption Data Cited at Rate Inquiry

WE FIRMLY believe that a substantial reduction in freight rates on blast furnace materials will have a marked effect in stimulating normal activity in the iron and steel business with a correspondingly large increase of traffic to the carriers. We do not agree with the contrary opinion expressed by Daniel Willard, THE IRON TRADE REVIEW, *a reliable authority, published in its issue of Jan. 5, 1922, a comprehensive analysis of steel consumption showing that the railroads consume for all purposes but 17.13 per cent of the total steel output of the country, as against 30 per cent estimated by Mr. Willard. It is our experience that iron and steel buyers of all classes are waiting for lower freight rates before making any but unavoidable purchases. It would need only a moderate increase in purchases by these general classes of steel users to more than offset the effect of reduced freight rates. A freight rate reduction is a necessary prerequisite to restore normal activity in the iron and steel industry.—W. A. Barrows Jr., testifying before the interstate commerce commission, for eastern pig iron manufacturers.*

Rates Unjustified, Says J. A. Topping

IT IS an economic axiom that in the long run the consumer determines the price; that is to say, there is a price which the consumer can afford to pay, and a price he cannot and will not pay," said John A. Topping, chairman of the Republic Iron & Steel Co., in his testimony before the commission. "It is therefore essential for the welfare of the producer and carrier to maintain costs on a basis that will permit prices and rates being named which the public can and will pay. There may be periods of abnormal costs or of price declines more violent than is warranted by cost reductions. That is now the situation with respect to iron and steel. Prices have fallen out of all proportion to the reduction in cost; consequently, cost of production for iron and steel must be further reduced, or the selling price of iron and steel must be increased, a contingency, which if forced

might be disastrous to both the carriers and producing interests.

"The history of the general rise and fall of commodity prices is too well understood to call for comment, other than to state that iron and steel prices advanced and declined with the changes in general economic conditions. The decline in iron and steel prices, however, was emphasized and liquidation hastened by an almost complete collapse in demand. Prices during the year 1921 declined over 50 per cent, while demand at the low point did not exceed 20 per cent. In fact, iron and steel has and is suffering the worst depression in its history, as average production for 1921 did not exceed 40 per cent, whereas, following the panic of 1907, production was at 70 per cent, and after the panic of 1903 averaged about 85 per cent.

"As a consequence of these adverse conditions during 1921, profits were quickly eliminated and losses substituted, while current operations are no less discouraging; in fact, losses became so pronounced that cost reductions were mandatory, and wage reductions of about 46 per cent followed. This reduction, taken in connection with other economies, resulted in cost reductions of about 35 per cent, while iron and steel selling prices, as previously stated, declined about 50 per cent, which decline compares favorably with the unprecedented average decline in farm products of about 56 per cent. Capital and labor employed in the production of iron and steel have, in fact, notwithstanding that freight charges constitute a big item in steel costs, carried the entire burden of readjusting the level of iron and steel prices from a war to a peace basis, and through lower prices established have contributed to lower railroad operating costs, and also by these price reductions have increased the volume of iron and steel traffic substantially by stimulating the demand for iron and steel, the net result being that substantial advantages have accrued to the railroads, but the burden created to effect this advantage has been carried by the producers of iron and steel, who now feel that the time has arrived for reciprocal action, for without substantial reductions in freight rates normal conditions of activity for iron and steel cannot be restored.

Shows Necessity of Reductions

"Where freight rates bear so large a percentage to the commodity value as freight rates now do to iron and steel costs, freight reductions are essential to a normal consumption of these commodities; in other words, with freight charges representing 50 per cent or more of iron and steel values, that normal consumption and movement of these commodities is impossible. Not to emphasize the claims of any particular district, but for purposes of illustration, permit me to point out that coal, which costs our company about $2.25 per ton to mine, and is shipped over the B. & L. E. railway and B. & O. railway, a distance of about 8½ miles, the freight charge is $1.50 per ton, consequently transportation represents about 75 per cent of the coal cost; on iron ore, where the mine cost runs from $1 to $2 per ton, varying with the character of the mine operation, the freight charge, based on an average movement from the Mesabi range of about 77 miles, is $1 per ton, or approximately 66 2/3 per cent of the average cost of ore, while the lower lake rate on ore is no less excessive, as the rate on iron ore for direct shipment from Cleveland to Youngstown, a distance of about 67 miles, is 99½ cents per ton. This rate the carriers voluntarily reduced to 74 cents per ton, effective during the last quarter of 1921, but permission to continue this rate after December, 1921, was denied the carriers, presumably because of this general investigation.

"Julius Kruttschnitt, chairman of the executive committee of the Southern Pacific railroad, recently stated in a published article "that freight rates on all railroads declined about 1 per cent between the years 1900 and 1917, and that the total freight rate increase to date was about 74 per cent." It was also stated by Howard Elliott, chairman of the Northern Pacific railroad, before this commission, "that there was practically no inflation in the transportation business during the war." These statements are not correct so far as they relate to freight rates on coal, coke, limestone, iron ore, iron and steel products, as may be easily ascertained by reference to freight tariffs issued for the Youngstown territory on iron and steel products for the years 1900 to 1917. It will be observed that freight rates increased from 3 per cent to 40 per cent, and that the total average increase from 1900 to 1921 on inbound freight was about 90 per cent. For the Birmingham district the increase on inbound raw materials was over 300 per cent. On the other hand, outbound freights on iron and steel in the central traffic territory from 1900 to 1917 increased to principal points about 30 per cent, and from 1900 to 1921 from 122 per cent to 160 per cent.

"It may be assumed, perhaps, that the claims made by the gentlemen mentioned had reference to the average of all freight rates being substantially unchanged during the period referred to, but even so, only one conclusion can be reached: Iron and steel products, and raw commodities required in their manufacture, have carried a disproportionate share of the transportation burden, as compared with other commodities; and, therefore, the unfairness of the increase made on iron and steel commodities under ex parte 74 is emphasized. Then again, inasmuch as railroad maintenance of way and equipment represents nearly 20 per cent of the cost for conducting transportation, and as iron and steel enters largely into this item of railroad cost, is it not manifestly to the advantage of the railroads to bring about, in their own interest, lower cost for iron and steel?

"The problem is, can the cost for conducting transportation be reduced sufficiently to put into effect freight rates on bulk commodities like coal, iron ore, iron and steel, sufficiently low to insure a normal movement? The answer is: *Yes, and it should be done.* The problem is largely a labor question, for labor is the big item of cost, as it represents about 60 per cent of the cost for conducting transportation, and yet this item of cost has hardly been touched, the reduction effected amounting to only about 12 per cent; whereas the wages of other labor have been reduced from 30 per cent to 50 per cent. It is clear that the railway labor board should not oppose but recommend that the railroad executives make further wage reductions and adjustments in keeping with competitive rates for labor, otherwise you are exempting labor from the economic consequences of the war by maintaining war rates in times of peace. This, in the face of reductions in the cost of living variously estimated by the bureau of labor statistics from about 22 per cent to 37 per cent, depending upon the locality.

Would Repeal Adamson Law

"If the Adamson law stands in the way of reasonable adjustment in the hours of work or the rates of pay, its repeal should be urged in the public interest. Futhermore, public sentiment does not approve of standardized labor rates, because pay so based conflicts with economic common sense; in other words, labor has not in the past, and cannot hope in the future to escape the law of supply and demand. Aside from these reasons, it would be unfair to the public interest and labor employed in general industry to burden railway costs with higher pay for the railroad carpenter, machinist, plumber, painter or other labor less skillful, than going rates paid for labor of this class in the communities where employed. It is at least pertinent to say in this connection that business sentiment strongly favors centralized railroad control and regulation, because we believe that it would be to the interest of both the railways and the public to have railroad costs regulated by the same authority that regulates railroad rates and railroad revenues, for no business can be successfully managed unless responsibility is centralized under one head. To accomplish this result, we are of the opinion that the railway labor board should be made subordinate to your commission.

"We are of the opinion that fair readjustments of freight rates will gradually restore normal conditions of demand for iron and steel, and bring about normal traffic conditions. While production has increased during the past 20 years about 320 per cent, and present steel ingot capacity is over 50,000,000 tons, yet the normal consumptive requirements of the country have also grown; in other words, the per capita consumption of steel has increased from 300 pounds in 1900 to 834 pounds in 1920, or about 178 per cent, while the population of the country increased nearly 60 per cent. During this period our exports increased over 300 per cent.

Under normal conditions, THE IRON TRADE REVIEW estimates, assuming we have the same ratio of gain in the future as in the past, this country will require by 1926 a productive capacity of not less than 51,000,000 tons, as against our record production for the

year, 1917 of about 45,000,000 tons. or as compared with our present indicated output for the year 1921 of about 20,000,000 tons. Production throughout the world estimated for the year 1921 was less than 50 per cent of normal; current selling prices are low, as are stocks on hand; current purchases are believed to be considerably below the upkeep requirements of the country and of the world. Therefore, the demand for iron and steel should be accumulating, and this cumulative demand can at least be partially, if not wholly, released through adjustments in transportation costs and reductions in freight rates, and the return of normal conditions of business conditions and transportation certainly considerably hastened thereby.

Corporation Subsidiaries Attack Rates

AN ARMY of statistics was marshaled before the interstate commerce commission by L. C. Bihler, traffic manager of the Carnegie Steel Co., who also represented the Lorain Steel Co., American Bridge Co., American Sheet & Tin Plate Co. and American Steel & Wire Co. Mr. Bihler said to the commission:

"The transportation costs on necessary ore, coke and limestone, to produce one ton of pig iron have increased, calculating the freight on the ore from the lower Lake Erie ports, and on the fuels and fluxes from customary points of supply in Western Pennsylvania and Ohio, from 74 to 107 per cent in the Mahoning and Shenango valleys, Pittsburgh, McKeesport, Donora, Neville Island, Mingo Junction, Bellaire and Wheeling districts, when comparing 1921 with 1914. This refers only now to the three basic commodities used in blast furnaces for the production of a ton of pig iron; on coke the increase in freight rates is as high as 124 per cent, on limestone 250 per cent and on coal as high as 236 per cent. There are also other items of substantial increases in freight on supplies, etc., which are in addition to the figures cited, and represent further increase in the cost of production of a ton of steel, such as brick, sand, clay, fluorspar, dolomite, ganister, firestone, etc.; coal for fuel under the boilers and gas producers. The advance on these materials range from 87 to 220 per cent.

"'The present rates on import chrome and manganese ores compared with rates in effect prior to October, 1914, to the Pittsburgh district from the Atlantic seaboard show an increase of 124 per cent.

"Taking a few principal points of destination on outbound manufactured iron and steel and comparing the rates in effect from Pittsburgh and Youngstown Jan. 1, 1914, with the present rates, increases are shown ranging from 117 per cent to 146 per cent. The increases on class rate traffic as a result of 5 per cent, 15 per cent, 25 per cent and 40 per cent increases is a 112 per cent.

"'Careful checking of our records in the shape of orders received shows that the largely increased rates under ex parte 74 had a material effect on the booking of new business. Prior to Aug. 26, 1920, much car shortage, open and closed was encountered by steel mills because of priority orders issued by the commission covering coal and grain, and we had an immense amount of piled tonnage on the floors held because of lack of transportation, and only when modified car orders came along from the commission were we able to vigorously attack the piled tonnage and accept additional new business, so that liberal shipments made in the last half of 1920 were largely disposition of accumulation of earlier rollings which lay on the floor and the momentum of cleaning up of essential contracts, such as ship material.

"For instance, as at Feb. 28, 1921, the Carnegie bookings of new business were but 64 per cent of what they were on Sept. 30, 1920, and by April 30, 1921, they had dropped to 31 per cent and by July 31 of last year to 23 per cent, since which time there has been a slight increase largely of seasonable traffic, such as steel for tin plate to take care of vegetable and fruit production, plates for tankage for new oil fields, etc. We are still showing some substantial losses per ton in the selling price matched against the manufacturing cost of steel."

Sixteen separate iron and steel companies operating 54 blast furnaces near the eastern seaboard of eastern group territory were represented before the commission by W. A. Barrows Jr., who is spokesman for the freight rate committee of the eastern pig iron manufacturers.

Robert Hula, of the Steel & Tube Co. of America. Chicago, represented the Wisconsin Steel Co., Illinois Steel Co., Inland Steel Co., Milwaukee Coal & Gas Co. and the Steel & Tube Co. in asking "maximum relief" on coal.

M. D. Langhorne, superintendent of the Oriskany operations of the Lavino Furnace Co., laid the case of the Virginia Pig Iron association before the commission.

Slump in Steel, Effect of Rate Advance

F A. OGDEN, general freight agent of the Jones & Laughlin Steel Co., Pittsburgh, in his testimony before the interstate commerce commission, emphasized the necessity for removal of all of the 40 per cent rate advance authorized by the commission in August, 1920. He also declared "If freight rates are reduced the tariffs should be published on short notice in order that business may not be suspended pending the effective date of the tariffs." His testimony in part follows:

"The iron and steel business in the United States has been one of declining orders since September, 1920. There was a good demand in the iron and steel business up to that time and this decline in orders continued through the balance of 1920 and up to and including July, 1921, after which time there was an increase for the last five months of that year when some of the plants were able to operate probably as much as 40 or 50 per cent. It may be true, as has been stated, that the rate advances under ex parte 74 were not responsible for the slump in steel business, but we feel that it was a large factor in bringing it about as for the eight months prior to the effective date of ex parte 74, the steel mills of this country were doing a very large business.

"It is true, as has been stated, that the shipments in September and October, 1920, continued at a high rate. This was due to the fact that much steel was piled up at the mills in the months of May, June, July and August which should have been shipped in those months but was not, due to the so-called outlaw railroad strike and the shortage of coal. The car situation was better in September and October and heavy shipments were made in those months, but there was a big decrease in shipments during the latter part of November and all December, which continued until August, 1921, when there was an increase in shipments which lasted during the balance of the year. Part of this increase was due to the granting of an export rate on iron and steel to the north Atlantic ports which was a reduction of 25 per cent. This was not as much as it should have been as the manufacturers were selling their steel much below cost and the reduced freight rates were still giving the railroads a profitable return for the service performed. It is said that the export rate did not stimulate business much, but the records of exports of iron and steel for September, October and November, show a steady and substantial increase. August was the low month in the exportation of iron and steel but in September there was an increase of 23,176 tons over August; in October 20,815 tons over August; November, 44,765 over August, and December, 55,997 over August. The increase for the four months was approximately 144,753 tons of steel for export over and above the amount exported in August.

Suggestions for Employers

Employment Methods, by Nathan W. Shefferman, 573 pages, 5½ x 8½ inches; cloth; published by the Ronald Press Co., New York, and for sale by THE IRON TRADE REVIEW, Cleveland, $5 net.

This is an instructive manual, describing in detail practical methods for selecting men and assigning them to suitable employment. It covers, with a complete set of forms, the office end of personnel management as worked out by some of the large companies. It deals with organizing an employment department; overcoming opposition; obtaining, testing and assigning employes; and transferring, promoting and discharging workers in factory, office or shop. It explains the place of women in employment service; points out the causes of labor turnover, and suggests tested methods of overcoming it. Examples of successful personnel work from the practice of well-known companies are presented. The author is a consultant in personnel and employment management; formerly personnel manager for the Lycoming Foundry & Machine Co., Baltimore Copper Smelting & Rolling Co., and the C. F. Sauer Co.

The author calls attention to the many methods which came into practice as a result of the war emergency, based on scientific ideas. "Industrial commanders saw the necessity for holding fast to the new methods and applying what is good in them to the condition, even more baffling in some ways, of the period of readjustment," he says. Many of the matters discussed are not questions; and cautious students will hesitate to assume too positive a stand in regard to them until further information is obtained.

Referring to character analysis, the author says: "Because of the many discrepancies in the conclusions reached by those applying character analysis, the more advanced students of vocational selection have declined to consider character analysis of itself as worthy adoption, and the same may be said of personnel executives in general. Some authorities on personnel management have become so impatient with character analysis that their contempt is expressed in the refusal even to read or discuss the subject." The author also gives examples of psychological tests.

* * *

Information on Coal

Coal Manual, by F. R. Wadleigh, head of the fuel department, bureau of foreign and domestic commerce, Washington, 200 pages; 4½ x 6 inches; cloth; published by the *National Coal Mining News* and for sale by THE IRON TRADE REVIEW, Cleveland, for $2.50 net.

Probably at no time in the world's history has the fuel problem given so much concern to the inhabitants of a widespread area as at the present time. For this reason information regarding coal is of timely interest. Apparently this fact was recognized by the author of the *Coal Manual,* which is a concise treatise containing elementary knowledge on the origin, structure, chemistry and uses of coal. Mr. Wadleigh does not go into the subject of coal mining but begins with a description of the various classes of the fuel. The second chapter is devoted to a brief description of the coal fields of the world with tabulated estimates of the reserves of the various producing countries. Chapter III deals with the purchase of coal, the basis of buying being discussed in considerable detail. The subject of sampling and analysis is treated in a rather extensive manner, about 40 pages being devoted to this purpose.

Perhaps the most important part of the book is the chapter on uses of coal, in which bituminous coal for steam-making, locomotive firing, steamship and domestic use are analyzed and the advantage of the various grades discussed. Coals for gas producers, industrial furnaces and for coke ovens are classified and described in the same chapter. Chapter VI is devoted to anthracite coal and Chapter VII to coke. Valuable suggestions for operating boilers, furnaces and stokers are present in the next chapter, while factors governing coal storage are outlined in Chapter IX. A bibliography of literature on coal concludes the book.

* * *

A. S. T. M. Proceedings

Proceedings of the twenty-fourth annual meeting of the American Society for Testing Materials, htld at Asbury Park, N. J., June 21-24, 1921; cloth; 1198 pages, 6 x 9 inches; published by American Society for Testing Materials, 1315 Spruce street, Philadelphia, and for sale by THE IRON TRADE REVIEW; price $10, net.

This volume of *Proceedings* contains committee reports, new and revised tentative standards, and technical papers presented at the last annual meeting of the American Society for Testing Materials. The meeting is briefly summarized in the first part of the book and the president's annual address and the report of the executive committee are given in full. The next section is devoted to reports of committees including those on ferrous metals; nonferrous metals; cement, lime, gypsum and clay products; and miscellaneous materials. Tentative standards submitted at the 1921 annual meeting are published, including those pertaining to ferrous metals; nonferrous metals; cement, lime, gypsum and clay products; preservative coatings; petroleum products and lubricants; road materials; coal and coke; insulating materials, shipping containers; textile materials; and miscellaneous subjects. Twenty-four technical papers, a list of society officers and members of the executive committee and an index complete the book.

* * *

How To Standardize Production

Time Study and Job Analysis, by William O. Lichtner; 397 pages, 5¼ x 8½ inches; cloth; published by the Ronald Press Co., New York, and for sale by THE IRON TRADE REVIEW, Cleveland, $6.00 net.

The purpose of this book is to show

(*Continued on Page* 273)

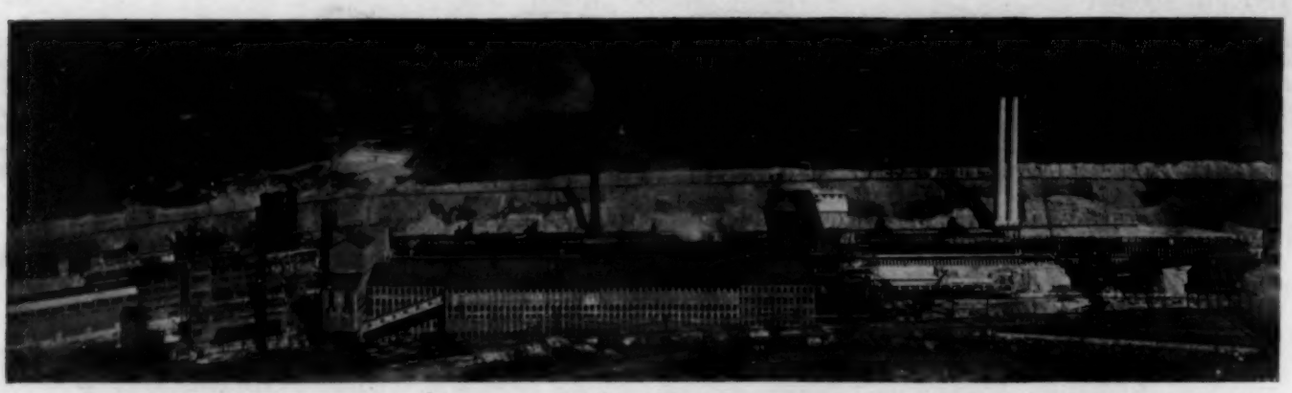


Fig. 1—Panoramic view of the Rosedale plant. The units shown from left to right are the sulphate of ammonia and by-product building, boiler house, gas washers and coolers, coal preparation, washing and mixing buildings, ovens and the coke handling building

Modernizes Coke Oven Plants

Cambria Steel Co. Improves Franklin and Rosedale Plants at Expenditure of About $15,000,000—Description of the New Equipment and Auxiliaries—Location Necessitates Solving of Unusual Engineering Problems

BY J. M. HASTINGS JR.

AMONG the improvements and extensions to its Rosedale and Franklin plants recently completed by the Cambria Steel Co., Johnstown, Pa. were alterations to the coke oven equipment involving an expenditure of approximately $15,000,000. The coke plants are three miles apart, the Rosedale ovens supplying fuel to the six Cambria stacks and the Franklin ovens to the five Franklin furnaces. The work was performed under contract by the Semet-Solvay Co., Syracuse, N. Y., being completed late in 1921 after 14 months of intensive effort.

The changes at the Rosedale works involved the entire coking process from the delivery of the coal at the mine shaft to the production of coke and by-products. At Franklin the new construction began at the point where the gas left the ovens and included complete by-product recovery equipment with the necessary auxiliaries.

Before starting the new work, equipment at Rosedale consisted of one block of Cambria-type ovens with partial by-product recovery, the coal being received from the Franklin washery, three miles away. To eliminate this expensive coal haul, a mine head shaft was erected in the center of Hinckston Run valley, immediately below the oven batteries, tapping Rosedale mines Nos. 5 and 6. This shaft is 405 feet overall from the mine gallery, 232 feet below ground, to the top of the hoist. A double skiphoist, each skip of 8-ton capacity, operated by a 1000-horsepower, motor-driven, hoisting engine provides a coal handling capacity of 6000 gross tons per 10-hour day. Since the capacity of the present plant is 3500 gross tons per day, an ample coal supply is assured. The Rosedale mine yields a low volatile coal

The author is in the plant development department of the Semet-Solvay Co., Syracuse, N. Y.

FIG. 2—ANOTHER EXTERIOR VIEW OF THE ROSEDALE PLANT WITH THE BUNK HOUSES AND OIL BUILDING IN THE FOREGROUND

FIG. 3—GENERAL VIEW OF THE FRANKLIN PLANT. FROM LEFT TO RIGHT ARE THE BOILER HOUSE, BENZOL PLANT, BY-PRODUCT BUILDING, GAS WASHING AND COOLING APPARATUS

having an average analysis as follows: Volatile, 18 to 18.75; fixed carbon, 70 to 72; ash, 10 to 11.5, and sulphur, 2.1 to 2.4 per cent.

Reduce Sulphur Content

To secure the desired quality of coke, high volatile coal must be added, the coal must be washed to reduce the sulphur and ash content. Accordingly from the head shaft skip, the coal passes through two 12 x 17-foot breakers and is conveyed by a 36-inch belt to the washery building. As it leaves the breakers, if desired, a part of the coal can be sent to a 250-ton loading-out bin for use at the boilers or elsewhere.

The washery building is 99 x 64 feet and contains 72 washing tables and 10 draining pits, each of 1550-ton capacity. These pits are served by two reclaiming bridges equipped with continuous bucket diggers which deliver the washed coal to a 36-inch belt conveyor leading to the mixing plant. Refuse from the washing tables falls into collector bins and then goes into railroad cars.

The washing plant has a capacity of 4000 gross tons per 10-hour day. About 20 per cent of the ash and 50 per cent of the sulphur in the coal are removed by the washing process and the draining pits are so designed that the coal recovered contains only from 6 to 8 per cent moisture.

In the coal-mixing plant, located at the eastern end of the washery building, a 250-ton bin is provided for the washed coal and a 1000-ton circular bin for high volatile coal. This coal is received from cars at a track hopper, sent through a breaker and a double-roll crusher and delivered by elevator to the circular bin. From these two bins, the high volatile and low volatile coals are delivered by short proportioning feeders into two spiral mixing conveyors where intimate mixture is secured, it being possible to vary the mixture to contain from 20 to 80 per cent high volatile coal. The mixed coal then is elevated by two belt bucket elevators, each having a capacity of 200 tons per hour, to two conveyor belts which deliver into the 3000-ton coal bunker above the ovens.

Ovens Have 3500-Ton Capacity

The four blocks, with a total of 208 ovens, at the Rosedale plant, have a total capacity of 2500 gross tons of coal per day. Of this total, the 120 Cambria-type ovens take about 1700 gross tons and the 88 Semet-Solvay-type ovens about 1800 gross tons. All the ovens are of the regenerator type.

From the 3500 tons of coal charged per day, products will be obtained approximately as follows:

Furnace coke, gross tons	2,695
Domestic coke, gross tons	40
Breeze, gross tons	65
Sulphate of ammonia, pounds	104,000
Light oils, gallons	12,000
Tar, gallons	32,000
Surplus gas, million cubic feet	25

Three 40-foot coke quenching cars

FIG. 4—TOP OF OVENS OF BLOCK NO. 3 AT ROSEDALE PLANT

operated by compressed air, each attached to a 27-ton electric locomotive, receive the coke as it is pushed from the ovens and proceed to one of the two brick quenching stations. The quenching operation requires about 55 seconds per oven. The quenched coke is dumped on a 200-foot inclined dock equipped with a rotary feeder at the foot, which delivers on to a 42-inch belt, leading to the screening station.

At this pont the oversize material is first removed by passing the coke over a rotary grizzly screen with 4-inch spaces. The oversize coke is crushed and delivered with the rest to a second rotary grizzly with ¾-inch spaces. All

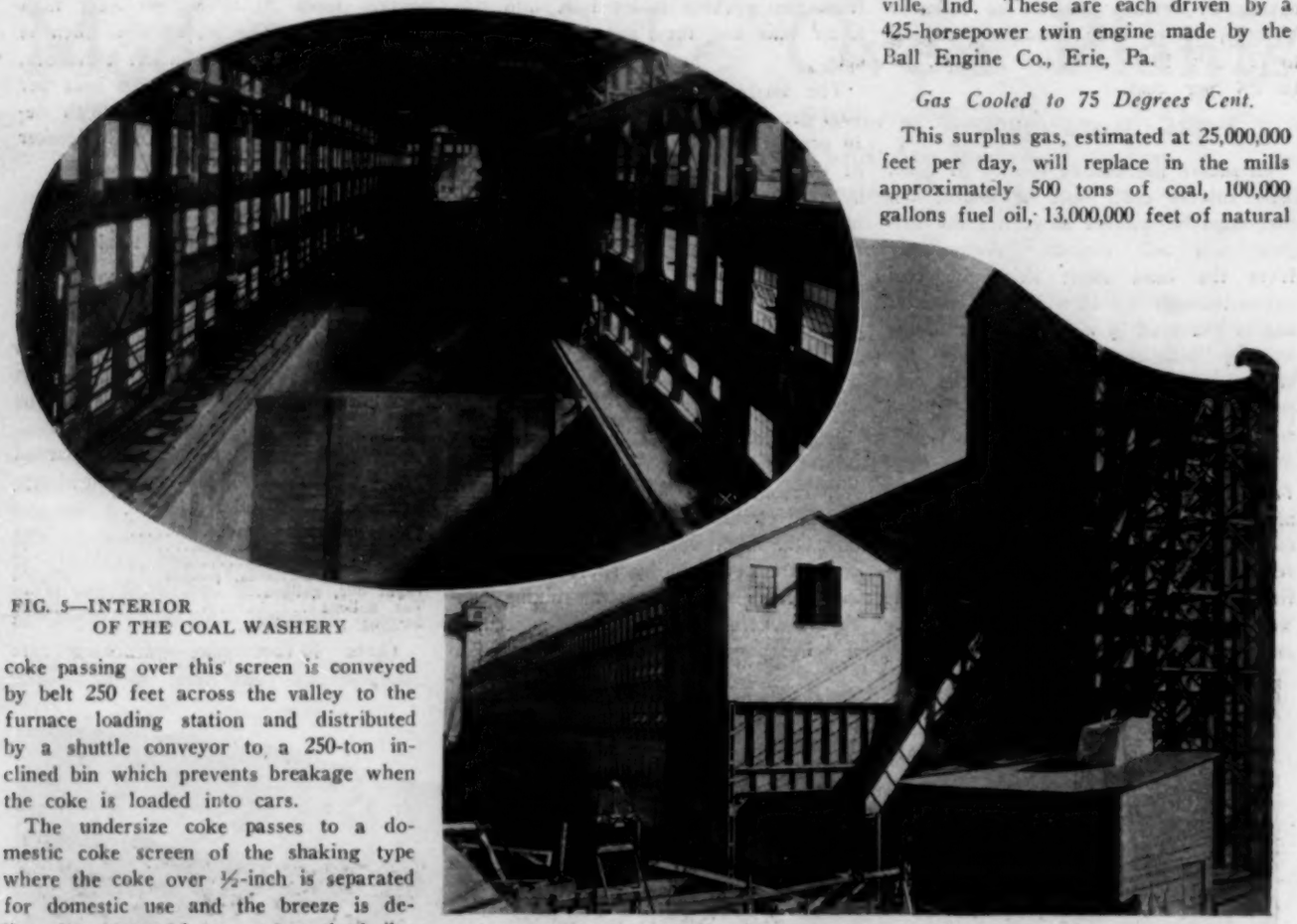


FIG. 5—INTERIOR OF THE COAL WASHERY

coke passing over this screen is conveyed by belt 250 feet across the valley to the furnace loading station and distributed by a shuttle conveyor to a 250-ton inclined bin which prevents breakage when the coke is loaded into cars.

The undersize coke passes to a domestic coke screen of the shaking type where the coke over ½-inch is separated for domestic use and the breeze is delivered to cars and returned to the boiler house.

Equipment Described

After leaving the four blocks of ovens the gas enters a 78-inch common foul-gas main leading to the primary coolers of which four are provided, each 10 feet in diameter by 45 feet high, arranged in parallel. These are of the Semet-Solvay grid type in which the cooling is performed effectively by direct contact between the gas and a circulating liquor, sprayed in at the top. This liquor is cooled after each contact with the gas, by passage through 120 stacks of 2-inch cooling coils, each 30 pipes high, over which water is running. The gas coolers not only cool the gas but also condense and remove practically all the tar and naphthalene.

From this point, the gas enters four exhausters produced by the P. H. & F. M. Roots Co., Connersville, Ind., each of 83.4 cubic feet capacity per revolution, two being driven by 300-horsepower motors and two by 15 x 22-inch engines built by the Ridgway-Dynamo & Engine Co., Ridgway, Pa. From the exhausters the gas passes through three tar extractors of 22,000,000 feet capacity which remove the last traces of tar, and enters the three ammonia saturators. Here the gas comes in contact with a 5 per-cent solution of sulphuric acid which absorbs ammonia to produce ammonium sulphate.

Three final coolers in series, of the same design as the primary coolers, are next in line. Here the gas is further cooled to about 20 degrees Cent. before entering the light oil scrubbers. The water circulated over the grids of these final coolers runs to a sump where any naphthalene remaining in the gas is brought down and collected and the water is pumped under a 200-foot head to a spray pond located 110 feet above on the hillside. From this pond the water returns by gravity to the tops of the final coolers. Tests on this spray pond have shown an actual cooling on favorable days to 3 degress Cent. below the atmospheric temperature.

The three light oil scrubbers are 16 feet in diameter and 90 feet high, and are filled with wooden grids similar to those in the coolers. A heavy petroleum absorbing oil is used to remove the light oils from the gas, the saturated oil being pumped to the light oil building.

The gas now is clean and ready for distribution. From 30 to 35 per cent of the total is returned to the ovens for fuel gas and the remaining 65 to 70 per cent is pumped to the steel mills by two 150 cubic feet exhaustors manufactured by the Connersville Blower Co., Connersville, Ind. These are each driven by a 425-horsepower twin engine made by the Ball Engine Co., Erie, Pa.

Gas Cooled to 75 Degrees Cent.

This surplus gas, estimated at 25,000,000 feet per day, will replace in the mills approximately 500 tons of coal, 100,000 gallons fuel oil, 13,000,000 feet of natural gas or 100,000,000 feet of producer gas.

FIG. 6—COAL WASHERY, AT THE ROSEDALE PLANT. THE MINE SHAFT IS AT THE RIGHT

The recovery of ammonia begins with the liquor circulation maintained on the collector or hydraulic main. By the use of sprays the gas is cooled to about 76 degrees Cent. somewhat relieving the load on the primary coolers, preventing effectively the formation of pitch deposits in the main and removing from the gas the fixed ammonia salts. Since the overflow from the primary cooler system is returned to the hydraulic main circulation, it is evident that the overflow from this latter circulation system will contain all the fixed ammonia, but little free

ammonia. This means a minimum volume of weak liquor requiring distillation and resultant low costs of ammonia recovery when sulphate is the desired product.

At the Rosedale plant one 6-foot ammonia still has been provided which handles the weak liquor produced. The ammonia gas from this still enters the saturators with the oven gas for absorption as sulphate. At the Franklin plant a condenser has been installed in connection with the ammonia stills to permit the production of concentrated liquor if desired.

From the saturators, the crystallized sulphate of ammonia is delivered continuously by air ejectors to centrifugal dryers, where it is dried and washed free of acid. From the dryers, a belt conveyor delivers the salt to the sulphate storage building, 176 feet long by 56 feet wide, where 4000 tons can be stored. The salt can either be loaded out in bulk in cars or bagged as desired.

From the light oil scrubbers, the absorbing oil carrying the light oils is pumped through a heat exchanger and a preheater into three stripping stills, which provide ample spare capacity. These are continuous stills, 6 feet in diameter, each with a capacity of 20,000 gallons per hour, in which the light oil is distilled off the absorbing oil, the former being condensed and the latter cooled and returned to the scrubbers. No intermediate redistillation of the light oil is required before it is worked up into motor fuel, benzol, toluol or solvent. The absorbing oil also is cleaned and washed in the process. The light oil produced in the Rosedale plant is shipped to the benzol plant at Franklin.

The new boiler house at Rosedale contains three 768-horsepower boilers manufactured by Babcock & Wilcox Co., New York, each equipped with a stoker for burning breeze. The plant is provided with track hopper, elevated and fuel bins for breeze or coal handling and a traveling bucket and skiphoist for removing ashes.

Two air compressors constructed by the Bury Compressor Co., Erie, Pa., have been installed, each directly connected to a 225-horsepower motor. These have a combined capacity of 2000 cubic feet of free air per minute to supply the various needs of the plant.

In the transformer building are two 500-kilowatt, 250-volt direct-current motor generator sets and one 500-kilowatt, 275-volt, synchronous converter for supplying the direct current required in the plant. High tension alternating current from the steel plant power house is transformed for the coke oven plant by three 1000-kilowatt-ampere transformers.

Modern locker and toilet facilities are provided in the several buildings. Care has been taken throughout the plant to render the working conditions safe and attractive.

The old Franklin coke oven plant consisted of 11 batteries of various types, with a total of 492 ovens having a capacity of 4500 gross tons of coal per day. Partial recovery of by-products was undertaken in old-type apparatus.

No changes have been made to the ovens proper but beginning at the points where gas leaves the oven chambers, new by-product recovery apparatus was installed which handles the entire gas output of the plant, including hydraulic main circulation systems, gas washing and condensing, tar, sulphate of ammonia, light oil and surplus gas recovery and benzol plant, boiler house and auxiliary equipment.

After leaving the ovens, the foul gas from five blocks enters one main and that from the remaining six blocks enters another, which combine in a single 60-inch main at the three primary coolers. These are of the grid type similar to those at Rosedale but somewhat larger, being 16 feet in diameter by 45 feet high. Each cooler has a capacity of 60,000,000 cubic feet of gas per day. The circulating liquor is served by 160 banks of cooling coils, each 30 pipes high.

From the primary coolers the gas enters the by-product building which is of steel and brick construction. In this building are located the four turbo exhausters installed by the De Laval Steam Turbine Co., East Trenton, N. J., each of 14,000 cubic feet per minute capacity, five tar extractors and five saturators for ammonia recovery. The gas passes through these sets of apparatus in the order given and returns to the six final coolers and six light oil scrubbers outside the building, each in two sets of three in series. These are 13 feet in diameter, the coolers being 45 feet high and the scrubbers 90 feet high. From this point a 42-inch line carries fuel gas to the boilers to take care of the Sunday gas and a 30-inch line delivers surplus gas to two turbine driven boosters and thence to the steel plant.

Since the ovens are not of the regenerator type, only 28,000,000 feet of surplus gas will be released per day when operating at normal capacity. However, this gas will replace approximately 570 tons of coal, 120,000 gallons of fuel

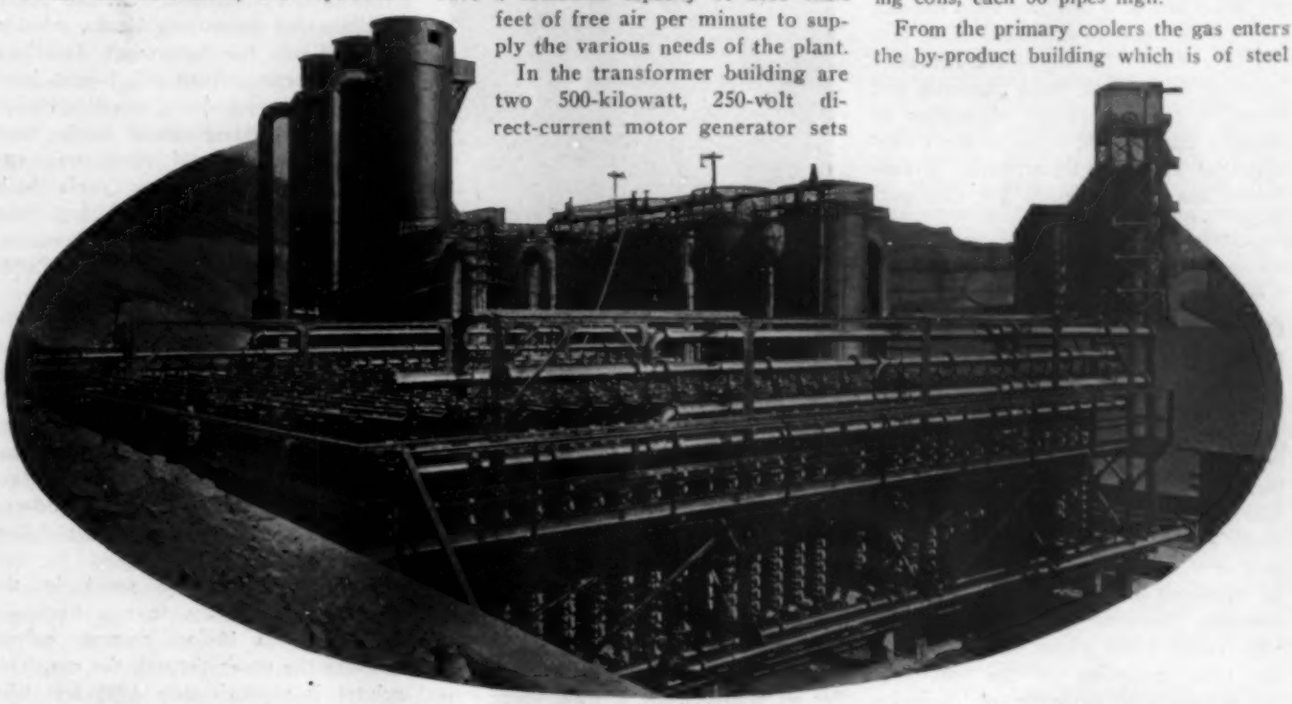


FIG. 7—GAS COOLING AND WASHING TOWERS. COOLING COILS MAY BE SEEN IN THE FOREGROUND

oil, 15,000,000 feet of natural gas, 120,000,000 feet of producer gas. The total surplus gas from the Rosedale and Franklin plants at full operation will replace daily, 1070 tons of coal or 220,000 gallons of fuel oil, representing a direct saving of from $5000 to $10,000 per day.

The Franklin coke oven plant at full operation will produce 40,000 gallons of tar, 126,000 pounds of sulphate of ammonia and 15,000 gallons of light oil daily in addition to the gas.

Ten centrifugal dryers in the by-product building receive the sulphate precipitated out in the saturators and deliver the dried salt to a belt conveyor running into the storage room where 5000 tons can be stocked. If desired the two stills provided to free the fixed ammonia and return it to the gas for absorption as sulphate can be used to make crude concentrated ammonia liquor, since a condenser has been provided for that purpose.

Operation Is Flexible

This flexibility of operation is one of the outstanding features of the ammonia recovery system. When sulphate is the desired product, a minimum volume of ammonia liquor requiring distillation is produced, but if for any reason it becomes desirable to make concentrated liquor, the several circulation systems can be reversed and with the addition of small amounts of water, a large proportion of the total ammonia in the gas may be recovered in the form of liquor. The ammonia recoverable as liquor in this way varies from 15 to 85 per cent of the total, according to the coal used. To permit this flexibility of operation, it is necessary that the stills provided have sufficient capacity.

In the benzol plant, four stripping stills similar to those at Rosedale, have been

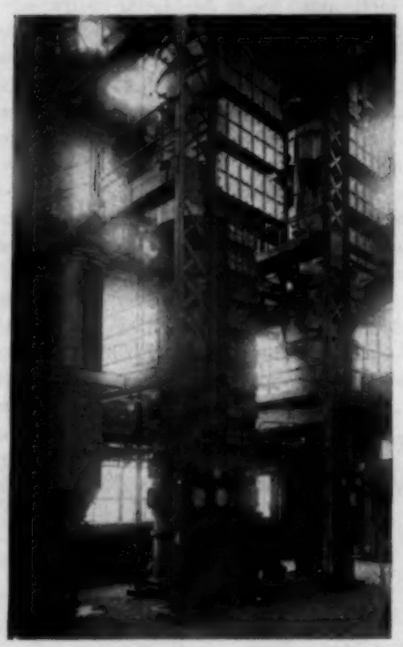


FIG. 9—AMMONIA STILL AND CONDENSER IN ONE OF THE BY-PRODUCT BUILDINGS

installed together with the usual equipment of preheaters, heat exchangers and decanters. There also are two motor-benzol stills with light oil washing equipment and three intermittent stills for the production of pure benzol, toluol and solvent naphtha. In this plant all the light oil produced at Rosedale and Franklin is rectified with daily outputs of approximately 22,000 gallons of motor benzol, or 16,600 gallons of pure benzol, 3700 gallons of pure toluol and 1000 gallons of solvent. This plant has storage tanks for all products and a drum loading station.

The new Franklin boiler house contains five 768-horsepower boilers, each equipped, as at Rosedale, with a stoker for burning breeze. A transformer building has been erected which contains three 500-kilovolt-ampere transformers and motor generator equipment of sufficient size to furnish the direct current required in the plant. The pumps used in the several operations are located in two separate houses. Adequate locker and toilet facilities are provided throughout the Franklin plant.

Problems Encountered

Due to the narrowness of Hinckston Run valley where the Rosedale plant is located it was necessary to build on three distinct elevations. On the upper level are the four oven blocks, on the middle level, the by-product buildings and equipment and on the lowest level the coal washery and coal handling equipment. In building these levels over 150,000 cubic yard of earth was excavated and 50,000 cubic yards back filled. Retaining walls 2000 feet long were built, which with the various foundations, required a total of 70,000 cubic yards of concrete.

In laying the oven foundations, conditions made it necessary to sink 156 caissons to solid rock. The caissons carry a series of 6-foot square reinforced concrete beams and a concrete slab 3 feet thick upon which the normal coke oven foundations are erected. Several of the caissons ran into abandoned mine galleries 30 or 40 feet below ground.

To provide working space in the center of the valley, it was necessary to construct a 16-foot concrete culvert to carry the water through the run. This culvert is approximately 1300 feet long extending through the length of the plant.

In laying the foundations for the by-product building, particular difficulty was

(*Concluded on Page* 274)

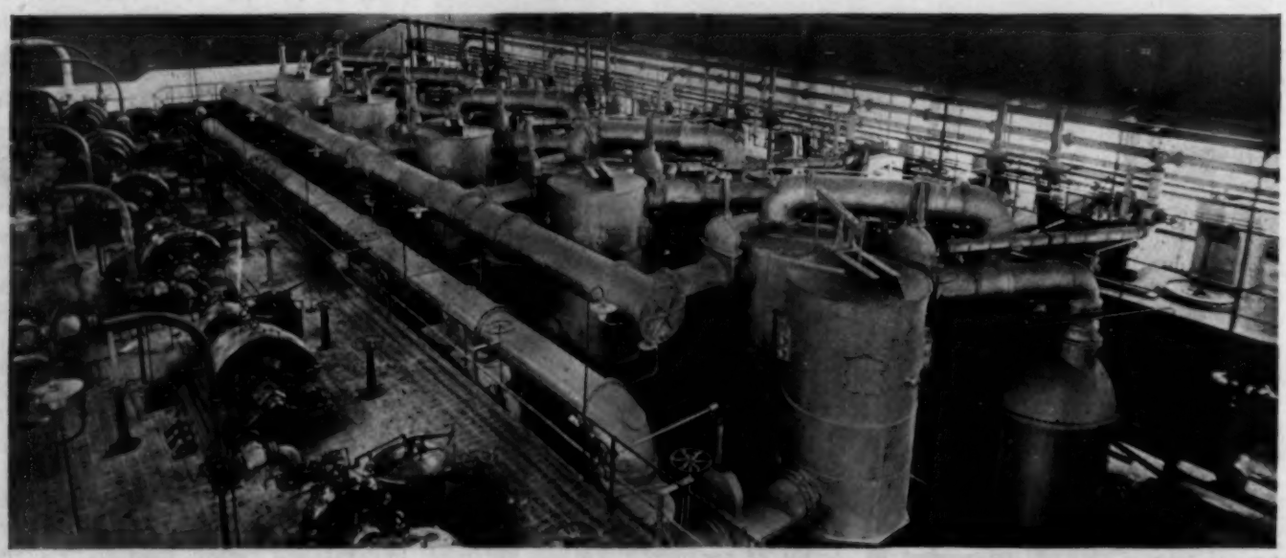


FIG. 8—INTERIOR OF THE BY-PRODUCT BUILDING AT THE FRANKLIN PLANT. FROM LEFT TO RIGHT ARE THE EXHAUSTERS AND BOOSTERS, TAR EXTRACTORS, ACID SEPARATORS, AMMONIA SATURATORS AND CENTRIFUGAL DRYERS

Using Clean Cold Producer Gas

Development Dates from 1902 when First Experiments Were Made—Problem of Separating Tar from Water Solved by Use of Glass Wool Extractor—Advantages of Clean Cold Gas for Industrial Use

BY C. F. KAUFMAN

SINCE the first pioneer work with raw gas, many engineers, builders and fuel users have devoted their time, ingenuity and resources to its development and utilization. On the other hand, few realized the possibilities of clean producer gas made from bituminous coal. One of these who were not content to devote their talents to the further development of the raw gas system was H. F. Smith, of the Smith Gas Engineering Co., Dayton, O. Mr. Smith conducted a number of experiments in making clean producer gas from bituminous coal. His efforts were rewarded with success, and through them the production of clean producer gas from bituminous coal has been brought to its present state of development in a comparatively few years.

The first experiments for determining the type of equipment best suited to make producer gas from bituminous and anthracite coal were made about the year 1902. A number of experiments were conducted to determine the feasibility of using the double-zone method of making clean gas. The volatile hydrocarbons were to be converted into fixed gas within the producer itself. The conclusions derived at that time were that few American coals contained enough fixed carbon to furnish the heat necessary to carry on combustion and convert all of the volatile matter of the coal into a fixed gas. The experiments were abandoned because the number of American fuels available for the operation of such producers limited the application of such equipment and did not seem to justify its development. Several years later the Westinghouse Electric & Mfg. Co. did a great deal of work with producers of this type, and several plants were installed, but were not very successful. The experience of the Westinghouse company justified Mr. Smith's original conclusions concerning the double-zone type of producer.

Continues Experiments

In 1907 Mr. Smith resumed his experiments of making clean producer gas from bituminous coal in an ordinary up-draft producer and extracting the tar from the gas by means of cooling towers and mechanical scrubbers of various types.

The double-rotor, inertia-type scrubber subsequently was developed and a considerable number of plants installed between the years 1908 and 1912. These were generally used in connection with power plants or small industrial heating installations. These mechanical scrubbers proved to be fairly successful, and a few installations still are in operation.

The principal drawbacks to this method of extracting tar from gas are that a large amount of power is required in the process, that the tar and water used in the mechanical scrubbers are so thoroughly emulsified that it is almost impossible to separate the tar from the water. In most cases the emulsion cannot be discharged to stream or sewer, therefore seriously limiting the number of places where installations can be made. Some of the tar can be separated from the water, but it contains such a large percentage of moisture as to be useless for commercial purposes and cannot be successfully returned to the producer for gasification. The operation of these mechanical scrubbers is attended by the usual difficulties in maintaining high-speed machines in operation under the conditions which prevail in a gas-cleaning plant.

Attempt to Separate Tar

About this time various methods of separating tar from water and returning tar to the producers were tried. These attempts met with only partial success. It was impossible to separate all of the tar from the water because of the emulsified state. The separated tar generally contained about 50 per cent of water, and the producer design was not well suited to the purpose of tar return.

In view of the difficulties encountered with mechanical scrubbers, Mr. Smith performed a series of experiments in electrical precipitation of tar from gas and came to the conclusion that electrical precipitation is impractical in the ordinary producer gas plant, and until such apparatus is developed to a much higher state of efficiency than at present, it cannot be used for the removal of tar from producer gas with any considerable degree of success.

However, it was evident that some type of apparatus had to be designed for removing the tar fog from the gas before delivering it to the distributing piping system. A long series of experiments resulted in the development of what is known as the Smith glass wool tar extractor. This apparatus consists of a mat of spun glass held firmly between two perforated plates and located in the gas line beyond the producer. The mat is so constructed that to force the gas through it requires a pressure of two or three pounds per square inch. The gas entering this mat contains the tar in the form of tar fog. The particles are so fine that a felt hat placed over the end of the pipe from which the gas is escaping does not stop the tar particles, they pass right through the felt.

Glass Wool Not a Filter

The spun glass mat does not act as a filter, for the material filtered out of the liquid or gas remains in the filter. In this case both tar and gas go through the mat. The tar enters in the form of fog, and leaves in the form of large drops, which are too heavy to be carried along in the gas current. They fall into the bottom of the pipe and drain off into a suitable trough.

The glass wool tar extractor successfully solved the problem of making producer gas from bituminous coals and lignite, and now the daily capacity of plants operating on this fuel is much greater than those operating on anthracite or coke. The first commercial installation of glass wool extractor was made in 1913, and up to the present time tar extractors of this type have been installed which have a capacity to clean approximately 600 million cubic feet of gas per day. The advantages of the extractor are that it requires less power than mechanical scrubbers, is much more efficient, and water is not used in its operation, consequently no emulsion of tar and water is made in the plant, and the tar and water can be separated. In all plants using this extractor the tar and water are separated and in most of them the water is recirculated and the tar returned to the producer for gasification. No water need be discharged to stream or sewer, and therefore no complications arise with local authorities on account of tar in sewerage disposal plants or in streams. All electrical precipitation plants

From a paper presented at the Nov. 19 meeting of the Metropolitan section of the American Society of Mechanical Engineers. The author is combustion engineer, Crucible Steel Co. of America, Harrison, N. J.

for the removal of tar from producer gas have been replaced by the glass wool extractor or abandoned.

The tar extractor, having been developed, it became clear the type of producer to be used should be of the simple up-draft type, as it was easier to remove tar from the gas than to try to operate a producer plant in such a way as to make no tar. In the subsequent development of producer plants Mr. Smith has worked along this line. All producers are of the up-draft type. Within the last two years a mechanically operated up-draft producer has been developed especially for the manufacture of large volumes of clean producer gas.

Two furnace engineers also have contributed materially to the success of clean gas. They are Arthur L. Stevens, whose work has been in the steel industry and H. L. Dixon, whose efforts have been largely confined to the glass industry.

Progress in Hot Gas Producers

Much progress also has been made in the past 25 years in hot gas producer construction, although there are but four leading types of hot gas producers in use in America. They are known as the Hughes, R. D. Woods, Morgan, and Chapman types and each is an excellent machine. The hot-gas field owes much to Mr. Hughes. It was while he was chief engineer of the Pencoyde Iron Works that the first successful mechanical producer was installed in America. It is still in operation. Of the four producers mentioned the Chapman-type is perhaps the most distinctive in that it is the only gas producer sold in parts.

For many years hot or "raw" gas, as it is sometimes called, has been applied to heating furnaces and to the heat treatment of steels. Today the raw gas system finds its greatest application in the steelmaking industry especially on large furnaces situated a short distance from the producers. When the gas is used hot, a great part of the tar is not condensed but remains in the gas, thus necessitating delivering mains of large diameter lined with fire brick. The accumulated lamp black and heavy pitch must be burned out at frequent intervals, and for this reason the use of hot gas is limited to large furnaces such as open hearths, soaking pits, lime kilns, brick kilns, glass melting tanks, crucible melting furnaces, etc., where close regulation is not vital and where men, especially those in the steel industry, have never experienced working conditions not associated with the smoke and dirt incident to the operation of the plant.

To attempt to distribute hot gas through small mains means a duplication of mains in order to clean out clogged lines. Clean gas finds application in places where gas must be distributed over considerable distances, where close regulation is necessary, where many small furnaces are to be heated, where centralized coal and ash handling is desirable, where the fuel available is unsuited to making raw gas and in the gas power plant. It is distributed through unprotected pipes, the area of the pipes required being only one-tenth that customarily allowed for hot gas, since the gas delivered is cold and of corresponding smaller volume and is usually propelled by a positive pressure blower.

Cleaning Problems Eliminated

Owing to the fact that the gas is delivered to the mains clean and cold there are no deposits in the mains. It is not necessary to shut down periodically to clean out flues as in hot gas practice and no special provision is made for keeping the flues clean, beyond those ordinarily made for distribution of gas from city works.

In a mechanical sense the efficiency of distribution of cold gas compared with hot gas lies in the fact that the volume of gas to be distributed is much smaller due to the cooling of the gas and propelling force used. However, the greatest gain in distributing efficiency, lies in the fact that cold producer gas remains unaltered in composition and is delivered to the furnace under exactly the same physical and chemical state as when generated at the producer.

This is not true of hot gas. One of the chief constituents of producer gas, carbon monoxide, is unstable between the temperatures of 450 to 1000 degrees Cent. and when maintained at this temperature, as is unavoidably done in hot gas flues, it will spontaneously decompose into carbon dioxide and free carbon. Free carbon thus deposited is the principal source of the soot found in hot gas flues. There is also a pronounced chemical reaction occurring between methane and water vapor at these temperatures which results in the production of carbon dioxide and the liberation of hydrogen. The nature and character of these changes has been determined by careful analysis of gas taken at various points along hot gas flues.

When the gas is delivered cold no such reaction or decompositions occur. The gas is delivered to the furnaces with its full effectiveness conserved and free from thermal losses either from decomposition of the constituent elements of the gas or from heat radiation emanating from the flues.

As for the efficiency of utilization in a regenerative furnace, investigations have shown that thermal energy represented by the heat of the gas delivered to a regenerative furnace does not always contribute directly to furnace efficiency. It has been shown by practical tests that the direct and immediate effect of delivering hot producer gas to the checkers of a regenerative furnace is to raise the temperature of the stack gases from the furnace. It is a fact that the checker work cannot possibly be cooled below the temperature of the entering gases and that conversely the flue gas passing through these checkers cannot be cooled below the temperature of the entering hot gas. From this it will be seen that the amount of heat present in producer gas as sensible heat is wasted at one point or another. In clean cold gas practice it is removed in the gas plant and taken up again in the regenerators in the furnace with a lowering of stack temperature. When hot gas is used the sensible heat is carried into the regenerators with the gas and causes a corresponding increase in stack temperature.

It has been pointed out that by cooling and cleaning producer gas considerable combustible constituents are precipitated and lost. There is no question but that this loss did occur in producer plants making clean cold gas previously to 1917 and does still occur in a great many plants today, but where this loss is permitted, it is due to lack of appreciation of the benefits derived from the process of tar return. In plants not using the tar return system it is usual to burn the tar under steam boilers, as it has no commercial value due to its high moisture content.

Advantages of Tar Return

While employed at one of the country's largest automobile plants. The writer was present at a series of experiments conducted in 1917 and 1918 to determine the value of tar return and the best method of applying it. These experiments proved conclusively that tar can be disposed of easily and with great economy by spraying it above the fuel bed in a gas producer, the heat contained in the outgoing gas being utilized for the purpose of cracking the tar into gas. When this method of disposal is used the tar removed by the extractor during the time the tar is being returned to the producer is in the form of a limpid tar that may be pumped any distance through non-insulated pipes without danger of clogging. In December, 1918, the writer personally supervised the filling of an ordinary oil barrel with tar taken from under the extractor in the gas house of the previously mentioned automobile plant. After filling, the barrel was put in the open and left to remain all night. The next morning the tar could easily be stirred with a small wooden paddle. The same experiment was repeated in January,

1920, at the Harrison plant of the Crucible Steel Co., of America.

The chemical make-up of the gas is altered when tar is returned to the producer for gasification. The principal change is in the hydrogen-methane content. The percentage of hydrogen decreases slightly with a considerable increase in the percentage of methane contained. The increased methane content, however, more than compensates for the loss of hydrogen, for every per cent of methane gained, the gas gains approximately 10 B. t. u.

The theory has been advanced that whenever a hydrocarbon is subjected to a cracking operation all possible products, from hydrogen to pure carbon, are formed and that if the concentration of these compounds is increased by introducing into the reaction an excess of this particular compound, the formation of that compound will cease and the entire hydrocarbon series will resolve itself into other compounds that are not present in as great concentration. Applying this theory to the problem of tar return, it will be seen that by increasing the concentration of tar compounds the formation of new tar is largely prevented, and if hydrogen is supplied in sufficient excess, the excess will be absorbed in large measure with the corresponding increase of methane or other hydrocarbons.

How well this theory is borne out in practice is shown by the following actual analyses taken at the gas plant of the Crucible Steel Co. When no tar was being returned the analysis was as follows:

	Per cent
Carbon dioxide	5.6
Carbon monoxide	18.0
Methane	3.5
Hydrogen	12.4
Oxygen	0.2

When tar was being returned the analysis was as follows:

	Per cent
Carbon dioxide	5.6
Carbon monoxide	19.6
Methane	0.6
Hydrogen	10.3
Oxygen	0.2

Thus it will be seen that the carbon dioxide content remains the same and the carbon monoxide content was increased 1.6 per cent when tar was returned. Methane increased 2.5 per cent hydogen decreased 2.1 per cent and the oxygen content, of course, remained the same.

Temperatures for Return of Tar

For the successful gasification of tar, slightly more than ordinary care is necessary, because it cannot be sprayed upon a fire that is too hot. To do so will cause considerable soot and lamp black to be thrown off and will add to the work of the cleaning. If sprayed upon a fire that is too cool there is danger of saturating the fuel bed to a point where the necessary reactions will be prevented from taking place. Good practice requires that the physical heat of the gas at the producer offtake be in the neighborhood of 1000 degrees Fahr. when tar is being returned for gasification.

If it were possible to question all gasmakers who are in charge of clean cold gas plants, particularily those plants where the system of tar return is not used, as to what causes the most trouble in the operation of their respective plants, the writer ventures to say that fully 75 per cent would immediatedly answer "Tar". Tar is one of the products of the destructive distillation of coal and is made up of a complex mixture of chemical compounds. Singly these compounds give the gasmakers little or no concern but collectively in the form of tar they cause much trouble.

Various Methods Are Used

Different manufacturers of clean gas equipment use different methods for removing tar from the gas. Some are by mechanical means, some by washing and some by the destructive method. The method in use at the Crucible Steel company's plant is to force the gas under three pounds pressure at high volocity through the diaphragus of spun glass wool. This method has been found to be highly efficient, in fact the cleaning efficiency averages over 99.5 per cent.

A skilled gasmaker can reduce to a minimum the quantity of tar permitted to escape from the producers and in so doing lighten the work of the extractors and other cleaning apparatus. This can be done by closely observing and regulating the temperature of the distillation zone of the fuel bed, as the temperature at which the tar is distilled off has a important bearing on the general behavior, quantity and quality of the tar distilled. The lower the temperature of the distillation zone, the greater is the yield of tar, with a decrease in the quantity of fixed gases formed. However, it has been observed that tar distilled at a low temperature is much easier handled than is tar distilled at high temperatures, because it is not as heavy or viscous. In industries using clean cold gas for its low surphur content it is inadvisable to run heats in the distillation zones, for high heats are conducive of high sulphur contents. While on the subject of sulphur, it may be of interest to note that in the steel industry, particularly that branch of it devoted to the making of high grade tool steels, sulphur occurring in fuels is closely watched. Tests conducted by the Crucible Steel company to determine the quantity of sulphur present in clean cold producer gas after the gas has passed through the cleaning and cooling processes show the quantity present to be very low. The sulphur comes off in three forms—hydrogen sulphide, carbon bisulphide, and sulphur dioxide, but principally in the forms of hydrogen-sulphide and carbon-bisulphide in the proportion of about two of the former to one of the latter. The ratio, of course, varies with the character of coal used.

Clean cold producer gas burns with a clear blue flame, giving the furnace an atmosphere that is transparent. Even when working with a reducing atmosphere the furnace does not smoke. The furnace rooms are cleaner than where oil is used. The transparent furnace atmosphere is attributable to the absence of illuminants in clean gas. This together with combustion increases the effect of radiant heat when may at all times be absorbed by the metal, due to a perfectly clear hearth with little or no flame. With producer gas one is often deceived by the appearance of the material being heated. Often an operator used to coal or oil-fired furnaces is given the surprise of his life when he sees an ingot taken from a gas-fired furnace flow readily to the die, when he was quite sure, judging from the looks of the ingot and furnace, that it was not hot enough to forge. This penetrating heat has the effect of increasing the life of the dies as well as contributing to a better forged product.

For a long time, chemical and metallurgical experts have been wrestling with the question, "is the absence of luminants from clean gas detrimental to the heating quality of the gas?" Some fuel engineers hold that luminants, being a component part of the gas, must necessarily be highly effective, especially where heat is derived by radiation of the flame, and that non-luminous flame can only be used to the best advantage when made to impinge on the surface to be heated.

Is Luminosity Required?

This theory would seem to be supported by the fact that some of the largest steel concerns in the United States have adopted the practice of injecting small quantities of tar or fuel oil with by-product or coke oven gas in open-hearth furnaces in order to obtain luminosity, claiming that by so doing production is increased and that the obtained B. t. u. value of the gas is all out of proportion to the heat units contained in the tar or oil.

On the other hand it is pointed out that it is a well known law that a luminous flame is transparent to radiant heat as illustrated by the Ferry radiation pyrometer and that the use of this instrument has demonstrated that a luminous flame has little or no effect upon the reading of the instrument when measuring the radiant heat of a furnace.

It has been figured that in consuming a ton of coal 120,000 cubic feet of 160-B.t.u. gas, and a tar yield of 15 gallons are produced. The tar represents the solid carbon that would burn as an illuminant. The 120,000 cubic feet of gas, combined with sufficient air to burn it, will produce 256,000 cubic feet of products. If the furnace temperature be 2500 degrees Fahr. the ratio of expansion will be 6. Therefore, the volume of hot gases passing through the furnace will be 1,540,000 cubic feet. The volume of 15 gallons of tar is 1/770,000 of the volume of hot gas. As the cube root of 770,000 is 91.7, then the particles of carbon will be approximately 92 diameters distant from each other. Magnified to one inch they would be 7 feet 8 inches apart. With these figures in mind, it would seem that the illuminants in gas are nonessential to furnace efficiency and that the only valid objection to the removal of tar from the gas is the loss of B.t.u. value of the fuel thus removed. With the recent practice of returning tar to the producer to be cracked into gas, even this objection is eliminated.

The field for clean producer gas seems at this time to be unlimited as may be noted by the fact that it has been used in the baking of breakfast foods, roasting of coffee, and other baking operations in the food industry, for core oven and mold drying in the foundry, for japanning, lead melting, soldering, brazing, heat treating, forging, box welding in the metal industry, for glass melting and annealing in the glass industry, and for many applications in the chemical industry. In one of the largest middle western cities it is being used to mix with natural gas for distribution to both industrial and domestic consumers.

It should be remembered that making gas for use in gas engines and furnaces is not as simple as making gas for either one or the other alone. In furnace work a high hydrogen content is permissible, but in gas engine practice it has to be kept within certain limits or otherwise every one in the immediate vicinity of the engine will know it. This is especially true in connection with large engines for when an engine having a 42 x 72-inch cylinder back fires, the effect is terrific. The writer had occasion to help change over two tandem cylinders 24 x 36-inch gas engines, each driving a 500-kilowatt generator, and 200-horsepower air compressor from natural gas, having a B. t. u. value of 1000 to clean cold producer gas having a B.t.u. value of 160. Within an hour after the change was made the engines were carrying full load on the low-value gas without trouble and at the same time clean producer gas was turned in the piping system to the natural gas fired furnaces, and used in the same burners.

In comparing the B.t.u. value of producer gas with that of natural gas or oil it should be remembered that there is not the wide variation in the B.t.u. content of the combustible mixture that at first seems apparent. One cubic foot of clean producer gas of 160 B.t.u. requires 1.3 cubic feet of air for complete combustion or about 70 B.t.u. per cubic foot of mixture. One cubic foot of natural gas requires about 12 cubic feet of air for complete combustion. As natural gas averages 1000 B.t.u. per cubic foot, you would then have 13 cubic feet of mixture containing about 1000 B.t.u. or about 76.8 B.t.u. per cubic foot.

The manufacturing plant depending upon power produced by gas engines using clean producer gas may well consider the gas plant the main factor of the power equipment. Yet, in many cases it is the most neglected department of the entire plant, receiving no more attention than is absolutely necessary and operated by the cheapest labor obtainable.

Electric Traveling Crane Installed in Unusual Manner

A UNIQUE application of an electric traveling crane is shown in the accompanying illustration. At the plant of the Union Gas & Electric Co., Cincinnati, cooling water for the turbo-generator condensers is supplied from the Ohio river through tunnels to the intake well where it is first cleared of water-logged debris and silt by means of a heavy bar iron grill before reaching the traveling screens behind. This debris and silt is removed from the bottom of the well by means of a grab bucket and deposited in a hopper, the crane operating the grab bucket. This grab bucket frequently is called upon to remove water-logged objects such as tree trunks. The shape of the intake well is that of a sector of a circle and the crane spans the well radially, one end truck being pivoted on a roller bearing at the center of the circle. The other truck travels on a circular track at the outside edge of the well,, and since this track is at the floor level, a pipe railing is provided around the crane and the operating mechanism of the travelings screens as a safety measure.

The crane trolley with its suspended bucket travels along the entire length of the crane bridge as far in towards the center of the circle as efficient operation of the bucket will permit. With the operator's cab fastened to this trolley and extending above the top of the bridge girders, an unobstructed view of the bucket and well is given the operator. The crane, which was built by the Whiting Corp., Harvey, Ill., has a span 49 feet 10 inches and is designed for a lift of 100 feet, the grab bucket having a capacity of ¾ cubic yard. Two motors of 7½ horsepower each operate the bridge and trolley travel respectively and two 45-horsepower motors operate the bucket hoist, each of these motors being equipped with an electric brake.

Italians Now Face Many Problems

A Summary Based on a Report of Signor Stromboli, Who Advocates Government Aid for Italian Iron and Steel—Production Now at Low Ebb—Coal Is Needed

BY FRANCIS MILTOUN
French Correspondent of The Iron Trade Review

TWO factors have tended to curtail any great and rapid development in the iron and steel industry of the Italian peninsula—the utter lack of coal and the restricted iron ore deposits. Of the latter the chief are those of the Island of Elba, where there are today ten working mines, or properties susceptible of being worked, leased for the most part from the Italian government. The total number of mines is 28 for the entire country. Their iron content runs from 60.4 to 65.20 per cent. Smaller deposits in Sardinia, at La Nurra, have an iron content of 49 per cent. Others are in the Val D' Aost at Cogne, near Courmeyer, with a 55 per cent content. All these are being worked only partially. Italy in her North African Colonies of Cyrenica and Eurethia, has no exploitable deposits as yet, as are found in the French north African possessions and in Morocco. The Elba production now runs about 500,000 tons per annum.

The iron and steel industries of Italy are divided into two distinct classes. First are those steel works utilizing native ores, at Poroferrajo. Piombino Bagnoli of which the total production at its best is 400,000 tons per annum, but at present not more than a third of this figure. Other plants are those utilized for the remelting of scrap, the bulk of which is imported from abroad. A Franco-Italian agreement in 1921, besides coal and coke provisions, calls for the delivery of 150,000 tons of iron scrap per annum, but recently this has been curtailed by the abrogation of the Franco-Italian commercial treaties, though a modus vivendi is being sought whereby certain clauses of past agreements may be continued tentatively, this particular clause concerning metallurgical raw and semiraw products being the most important.

Other plants using native semiraw material are dependent upon the product of the Portoferrajo plant, which though fitted for the making of bessemer steel actually produced nothing but pig iron.

The Italian production of iron and steel in all its forms today is probably not more than a third of the entire consumption of the country as against 66 per cent in 1913. In the height of the war years Italy increased her annual production from approximately 800,000 tons to 1,304,000 tons. This is the maximum that it is possible to obtain with the rather less up-to-date equipment possessed as compared with that of other European countries. In 1920, pig iron output was 90,000 tons and steel output 774,000 tons. Last year the figures are estimated at 50,000 tons of pig iron and 350,000 tons of steel.

The labor situation is critical at the moment, whereas a year or more ago there were large numbers of troops still mobilizd, for the reason, it was said, to give them an occupation which they might not find immediately in industry. Today, as has come out at the Washington conference, Italy's army is at its possible minimum.

The iron and steel industries have been the chief point of attack by labor agitators, but more than this, affecting the high cost of production in Italy, we have the fact that ore and fuel costs are still three times what they are in America, based today's value of the lire of $0.044. Italy's costs also are a little less than double what they are in France. Italian pig iron, following the same scale of comparison, is rather nearer four times the cost of that of its chief European competitors.

The causes of these conditions are diverse, naturally, but they can be helped with government aid, such at least is confirmed local opinion. In the absence of specific figures annual pig iron imports are still valued at well over 125,000,000 lire, ($5,500,000) steel at 600,000,000 ($25,200,000) and scrap at 200,000,000 ($8,800,000).

The Wages of Agitation

There are 500,000 iron and steel workers in the Italian peninsula, of which probably not more than 50 per cent actually find employment at the moment, and these include those in diverse allied industries. In 1920 Piedmont and Ligurian metal workers put in not more than 35 hours a week, in 1921 this has probably fallen to well under 30, in lieu of the legal 48.

Wages rose during the war to 297 per cent of the prewar figure. Now by reason of the short week and the natural reductions which have been called for they have fallen to about double the 1914 figure. Workers claim that the industry as a whole should support an annual charge of 1,500,000,000 lire ($66,000,000) to meet the wage scale. Signore Stromboli professes that 60 per cent of this figure is all that the industry can stand. Whether the government is in a position to subsidize the industry, so that it will bloom into activity and the workers have a full week and a full dinner pail is the crux of the whole question affecting the possible future of Italian metallurgy.

From 12 to 15 lire a day for unskilled work means at the present rate of dollar exchange scarcely more than 50 cents a day at a minimum with $1.50 a day as a maximum for skilled men. Mid-year figures showed but 40,000 out of work in all productive Italian industries, which after all is more favorable than might have been thought.

The two great industrial-banking groups "Ansaldo" and "Ilva" still dominate the Italian iron and steel situation, though it may be said, without entering into detail as to their rivalries and financial difficulties of the moment, that this of itself is no deterrent to the possible development in a country where its home resources are so very limited. The administrators of these two great elements are indeed the molders of the entire metallurgical interests of the country, regardless of their political and foreign affiliations of which one and the other has been accused.

Italy has been gradually coming to the point where it recognizes that its iron and steel future is really dependent upon the French attitude and its moral or economical support. Already the Italian Industrial union recognzes this. If the powerful French interests seek to dominate Italian markets they will have German competition on their backs and Italian iron and steel of itself would then have to meet two powerful, if opposing, interests, with the ultimate result that one or the other would seek and perhaps find, Italian affiliations. It is hardly possible that there would be room for two outsiders.

The general situation in Italy is not as black as it is painted. Paradoxically

the situation is not susceptible of explanation but with the figures of July and August before one it is shown that government revenues are increasing by leaps and bounds. The two months show an increase of 337,000,000 lire over 1920, including 23,500,000 lire in customs dues, while industrial and commercial monopolies have returned together 140,000,000 lire in excess of what they did the year before.

While it is true that general imports have fallen off it is true also that Italy has sought to improve its material equipment in many lines. Since the first of the year orders have been placed abroad for 143 locomotives, several thousand freight cars and 63,000 tons of rails, chiefly in the United States and Germany. Italy has still exported, remarkable as it may seem, automobiles and even passenger cars to world markets and the latter which is still more curious to note, to France, notably for the Orleans railway.

Italy is still the most active of European countries in its hydro-electric developments, which mean cheap power. This is altogether favorable to industrial development. The State and private railways are developing the use of the power to a greater extent than in any other European country, and have indeed got a big start over other countries in this respect. An indication of this is shown in the import of something like 12,000,000 lire of wire in a recent single year, most of which was used for electric power transmission.

France Plans Vast Water Power System

FRANCE is projecting a vast electrical development, in part under the impetus of government encouragement and in part through private enterprise. The chief feature of the plan is for the electrification of railways and to supply industrial motive power. The project thus readily divides itself into two distinct branches, one involving large units so far as equipment and contracts go and the other for smaller units and accessories. The whole plan when carried out, and as it is being carried out, will offer a tremendous market for electrical equipment of all sorts from the largest generators down to small motors and switches.

The Rhone valley enterprise is purely industrial, though the Mediterranean railway will have to draw some of its current from this region, while the projects of the Pyrenean and Cevennes districts are to be developed primarily for the supply of electric power to the adjacent Midi and Orleans railway systems. The Rhone project may supply current to the Paris district, the municipality having made known its desire for 200,000 kilowatts.

Three of the seven great trunk railways of France have announced electrification programs comprising the following mileage: The Orleans line, 2080 miles; the Midi railway, 1985 miles, and the Paris, Lyons & Mediterranean, 1740 miles, total 5805 miles. The ultimate annual consumption of current by these systems is estimated, respectively at 506,000,000 kilowatt-hours, 600,000,000 kilowatt-hours, and 1,100,000,000 kilowatt-hours. The first installations will be intended only to serve those portions of the lines within 62 miles of the source of current. The Orleans railroad will electrify 40 per cent of its entire system, when the plans now being carried out are completed; the Midi 75 per cent, and the P. L. & M., 25 per cent.

These figures represent practically one-fifth of the entire railway mileage of France, 25,000 miles. When electric power is available over the entire systems its use will represent an annual saving of 3,000,000 tons of fuel oil, which to date France has been loath to adopt for its locomotives by reason of its being a product drawn from sources entirely outside its frontiers or possessions. The saving with respect to coal probably would amount to a third of the present consumption.

It is said to be an economic necessity for France to generate this motive force as speedily as possible. There is ample water power available, which as yet has hardly been tapped.

Electric Locomotives Are Few

Monsieur Sabouret, the chief technical engineer of the Orleans railway, has made the statement that for the replacing of 360 steam locomotives on this line alone there will be required 208 electric locomotives. Proportionately the same estimate carried farther would call for more than 600 electric locomotives for the initial stages of the plan. All of this is in the future. Save on what we call interurban lines, which here are virtually mountain lines, there are probably not a dozen electric locomotives in France outside of those operating in the Paris district, to Versailles and other towns.

The chief efforts which have been made to establish electric lines in France up to the present have been centered on three or four suburban lines out of Paris, with as many more projected when the war broke out, together with three or four minor mountain railways in the Alps and Pyrenees, and an occasional experimental line, run temporarily as a tryout, as that from Cannes to Grasse on the Riviera. Italian effort has been of much greater magnitude. In Italy as far back as 1898 the government first put into operation a plan for electrifying 1240 miles of the state railways, out of 8700 miles owned. A still more ambitious project is that which provides for the carrying out of electrification on 3720 miles more, at an expense of 8,000,000,000 lire. It is not without the bounds of possibility that Italian engineers will play a considerable part in the French electrical development in the next few years by reason of their extensive experience.

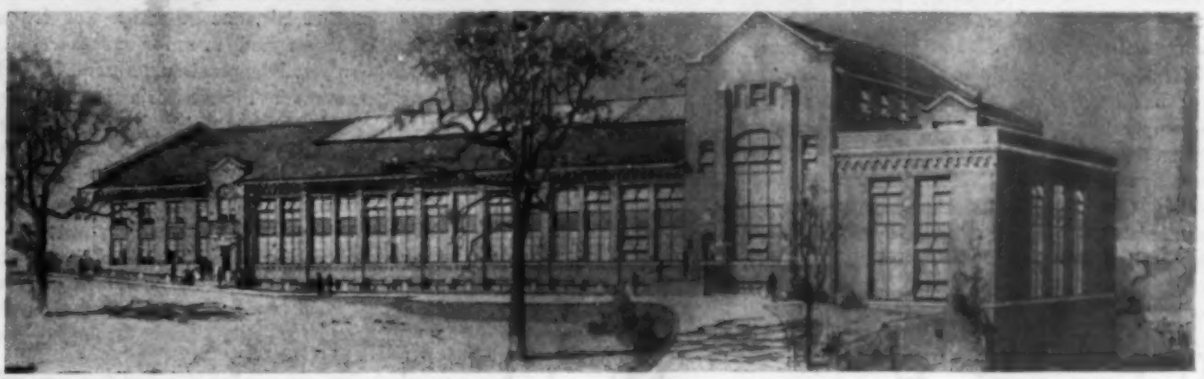
A committee of the quasi-governmental French Hydro-Technical association, under the presidency of Monsieur Perot, professor at the Ecole Polytechnique, has drawn plans for the complete utilization of the hydraulic resources of the country, with a view to their being transformed into electrical energy. The expenses of these preliminary studies are being paid by the government and the Syndical Chamber of Hydraulic Power. Two experimental stations are already in operation, one at Grenhole in the French Alps and the other at Toulouse in the Pyrenian district.

The committee is seeking to unify development procedure before too many and varied types of equipment are put into use. The standardization will include:

1. Unification of type of current and voltages.
2. Limits as to which current shall ordinarily be transmitted.
3. Methods to be applied to link up neighboring districts and systems with a view to preventing breakdown delays resulting from natural or other causes.

A thoroughly detailed map, of water power sources available for hydro-electric installations throughout France is almost completed. This map will be on a scale of 1:200,000. A smaller working map on a scale of 1:500,000 is also being prepared. The documents necessary for the work already accomplished have been put in the committee's hands by the ministry of public works, the ministry of war, the ministry of commerce, the ministry of

Building World's Finest Iron Ore Laboratory



WHAT is expected to be the finest and best-equipped laboratory in the world for the study of iron and manganese ores is being built in Minneapolis, Minn. This building will house the mines experiment station of the University of Minnesota and the North Central experiment station of the United States bureau of mines. The entire building and mechanical equipment will cost approximately $300,000, and $20,000 additional is available for laboratory apparatus. Work was started Dec. 17, 1921, and the contract calls for completion Sept. 1, 1922.

The building is to be of factory type construction, 60 feet wide, 280 feet long, the cubical contents being 1,000,000 cubic feet. The walls are to be constructed of brick and concrete; roofs of steel and slate and floors of concrete and asphalt mastic. The following is the general arrangement:

Left end—67 feet; two stories and basement; offices with laboratories in basement.

Center section—139 feet; two stories and basement; shops and laboratories in basement; main laboratory two stories high, with crane.

Next section—38 feet; five stories, three above ground; steel ore bins above and below with sampling, screening and crushing machinery on main floor; 10-ton elevator connecting all floors.

Right end—36 feet; one floor; furnace room 32 feet high with overhead crane; molding sand floor.

Equipment will include the following:

High pressure and low pressure steam lines; high pressure air lines and compressor; low pressure air lines and blower; high vacuum lines and pump; low vacuum lines and pump; city water lines; distilled water lines and still; Minneapolis city illuminating gas; three-phase, 220 volt, 60-cycle electric service; single phase, 110 volt, 60-cycle electric service; single phase, 220 volt, 60-cycle electric service; 110 volt, direct current electric service and motor generator set; all of the foregoing connected to all laboratories; four electrically operated cranes; one 10-ton freight elevator; special laboratory benches and tables; special drainage system.

The laboratory will be served by tracks from the Northern Pacific and Great Northern railroad, passing the right-hand side of the building, and a special electric haulage system will be installed to move mine cars in and out.

agriculture and other public bodies.

Counting large and small projects, there are already 88 French departments, or counties, where some sort of hydroelectric power is available at this time, with 30 general central stations, outside the Paris district, using coal, fully two-thirds of which establishments may be abandoned as soon as the universal use of water power can be adopted and the necessary distribution arranged.

The hydroelectric stations existing in France at the end of 1920 possess a total capacity of 1,165,000 horsepower or 850,000 kilowatts. Other plants in course of construction at this time aggregate 550,000 horsepower or 365,000 kilowatts. Projects which may be completed within 15 years are planned with an ultimate capacity of 3,000,000 horsepower or 2,200,000 kilowatts. The grand total of present and projected hydroelectric power therefore is 4,715,000 horsepower or 3,630,000 kilowatts.

Reviews of New Books

(*Continued from Page* 261)

in detail how to standardize production. It is a text book written by an able consulting engineer in management and construction, in simple and nontechnical terms; a plain and coherent explanation of the subject as might be given in a series of conferences with an executive charged with the responsibility of decision.

In chapters I to VI a general review is given of the principles of job standardization and their applictaion to the methods of time study and job analysis. In chapters V to VII the organization of a staff to carry out the work is discussed in detail from the point of view of the executive. In chapters VIII to XX a detailed description of the technique is given. The portion of the book especially may be used as a textbook and guide in an actual development of time study and job analysis in a particular case. In this part emphasis is placed upon applications of the technique described to the permanent needs of a plant. In chapters XXI to XXII job standardization is considered in its relation to industrial problems.

"A matter which the engineer must consider," says the author in his preface, "is the relation of job standardization to planning of the work from the inception of the order to the delivery of the finished product. Sometimes the improvement in planning precedes, sometimes it follows the work of standardization; but in any case the success of standardization is closely bound up with the methods by which the product is routed in the factory from process to process. Furthermore, inasmuch as pay and conditions of work—the two greater factors in the labor situation—are materially improved by time study and job analysis, the work of standardization has proved of great importance in connection with labor relations. Finally, even sales policies are affected by job standardization."

Modernizes Coke Plants

(*Concluded from Page 266*)

experienced due to the character of the soil at that point. Slides made heavy retaining walls necessary. In the completed by-product equipment, however, advantage has been taken of the different levels so that gravity flow of liquors has been provided in many instances where ordinarily pumps would be required.

Possibly the most formidable obstacle encountered at both the Rosedale and Franklin plants were those of material handling. There being no level space available at either plant, the storage warehouses were all erected at Ten Acre, about 1½ miles below Rosedale. At that point, 17 buildings were erected with a total area under cover of 71,840 square feet including brick sheds, cement sheds, steel and pipe warehouses and complete machine shops where a large part of the assembly details were carried out. All the material for both plants passed through Ten Acre, about 11,000 car loads having been handled during the period of construction. As housing facilities for the 1500 construction workmen were not available 21 bunk house were erected for this purpose.

A commissary department also was necessary consisting of one establishment at Franklin, one at Ten Acre and two at Rosedale, one of which was for white employes and one for colored. H. M. Crossett is general superintendent of both plants for the Cambria Steel Co. with J. W. McLaughlin assistant in charge at Rosedale and Mr. E. Merrill assistant in charge at Franklin. The construction work on both plants was supervised by A. T. Leavitt, chief engineer, Semet-Solvay Co. W. T. Snively and R. A. Foley were resident engineers in charge.

Utilizing Fusion Welding on Castings

BY H. S. RAWDON

IT IS only by a full realization of the cast nature of all types of fusion-welds that these processes, which have become so indispensable in the present-day metal industries, can be employed most efficiently and improvements worked out for their betterment in the future. The well informed metallurgist understands and appreciates the type of metal with which he is dealing in a fusion-weld. This can hardly be said in general however, of the designer and user of metal structures involving welding as one of the fundamental requirements.

In the accompanying table are summarized the mechanical properties of low-carbon cast steel prepared by the thermit process, and by arc-fusion. Cast steel formed by fusion in the gas-welding process essentially has the same properties as those from arc-fusion, usually however, with considerably higher ductility. The results given in the table indicate that there is no reason why metal approximating cast steel in its mechanical properties cannot be produced by any of the fusion welding processes. This is accomplished by the thermit method. Weld metal produced by the arc or gas process usually shows directional properties, that is, the results obtained for a test specimen depend upon the orientation of the sample with respect to the larger mass from which it was cut. Test bars cut parallel to the deposition layers show properties quite different from those of specimens cut perpendicularly to the deposition layers, particularly in their ductility. This difference, of course, necessarily results from the fact that there are layers in the casting. Somewhat similar results are obtained in tension tests of transverse and longitudinal specimens of ordinary steel forgings. This difference in properties is not to be considered as vital however, since in most welds the service stresses are more nearly parallel to the deposition layers than perpendicular to them. The fact is significant, however, since it illustrates an improvement in welding, anything which assists in eliminating evidence of layers of other unhomogeneity in weld-metal improves the properties of the material. Differences of this kind do not exist in the thermit welds.

Composition Changes Aid

The properties of cast steel may be materially improved by relatively slight changes in the composition of the metal. This is illustrated in the table above where it is shown that an increase in the manganese content produces an improvement in the mechanical properties of a steel casting. In welding by the thermit process, such changes of composition are produced by making the proper additions to the initial thermit mixture and it has been found by experience that such additions as titanium produce weld-metal of improved quality. The use of ordinary nickel steel wire for the gas and arc-welding of low carbon steel was pointed out by S. W. Miller to be an important application of the principle. The opinion of the writer is that in this direction improvements in fusion welding are most promising since the application of heat treatment for the improvement of fusion welds by grain refinement such as is used for ordinary steel castings is not practicable commercially. Two recent changes in welding practice along this line which are worthy of mention are the use of monel metal for cast-iron welding and the use of iron for the welding of monel metal and other nickel alloys.

The occurrence of initial stresses in castings is so common a phenomenon as to be regarded by some as a necessary though undesirable, accompaniment of every casting. While this probably is far from being the case, it is undoubtedly true that every commercial casting of complex design, particularly one containing "constrained" members, is sure to have internal stresses of relatively high magnitude. If fracture does not occur during the cooling of the casting, it often does when the piece is subjected to a slight external stress, either during testing or in service. In fusion welds, the conditions for setting up high internal stresses are favorable, much more so than in the usual casting process, so that the state of the material with respect to stresses is one of importance. The chances for irregular and uneven cooling by which stresses of high magnitude often result are favorable in fusion welding. The conditions obtaining in the simple case of oxyacetylene cutting of steel under no external constraint whatever may sometimes be sufficient to cause cracking of the metal. Specimens illustrating this, recently submitted to the United States bureau of standards for examination, indicated that in the case of heavy sections cracks were found frequently. This of course was on account of the chilling action of the heavier mass of metal. In actual practice, particularly in welding rigid or "constrained" members the conditions for initial stresses to arise are favorable. The differential contraction of the molten part upon solidification with respect to the adjacent solid metal, the variations in the rate of cooling of the welded piece, the com-

Discussion of a paper entitled "Fusion Welding," presented by S. W. Miller, Rochester Welding Works, Rochester, N. Y., at the American Iron and Steel institute meeting, New York, Nov. 18, 1921. Mr. Rawdon is physicist, United States bureau of standards, Washington.

plications introduced, in the case of iron and steel, by the expansion changes which accompany the critical transformations characteristic of these materials, all combine to render a condition of equilibrium with respect to stresses an impossibility.

Only scant information is available concerning the magnitude of these welding stresses. Any such stress must be less than the elastic limit, otherwise the material would yield somewhat and the magnitude of the stress is lowered. The absolute value of the stress is of less importance than its magnitude relative to the properties of the metal when hot. In addition to the hot-shortness of weld steel, caused by the oxide contaminations as discussed already, it may be pointed out that all grades of carbon steel and many alloy steels whether sound or unsound, possess the peculiar property which has been termed "blue brittleness", because it manifests itself in the temperature range corresponding to the blue "temper color". In this range the tensile properties, ductility, and notch toughness of the metal are less considerably than they are at a slightly lower or at a slightly higher temperature. These properties, the "hot shortness" of certain steels and the "blue brittleness" of most steels cause the cracking in fusion welds resulting from internal stresses. Although the stress may actually be below the elastic limit of the cold material, if it exceeds or is equal to the lowered elastic limit in the "blue brittleness" range, cracking may be expected to occur.

Castings Developed Cracks

Measurements made at the bureau of standards of the initial stress in cast manganese bronze which had been subjected to a "burning-in" process indicated a stress somewhat less than the proportional limit of the material as measured at ordinary temperatures. The stresses originated in the repairing process of "burning-in" a form of fusion-welding and their magnitude would not indicate that their presence was a serious problem. However, large castings of this material used in the construction of the Catskill aqueduct which had been subjected to the repairing process of "burning-in" developed cracks after several months of atmospheric exposure. This case illustrates another possible source of trouble arising from internal stresses in welds. In materials, such as most of the copper-rich alloys, which are subject to "corrosion, or season-cracking", the stress resulting from welding, though not high enough to cause trouble by itself, may be sufficient to permit cracking to occur when the material is subjected to the proper corrosive conditions as appears to have been the case of the manganese bronze casting just described. Although steel and iron are not subject to season-cracking ordinarily, the complications introduced by corrosive service conditions should be considered whenever welded articles are to be used in such service.

Enough has been said to emphasize the fact that the building-up of internal stresses in a fusion-welded article is a necessary accompaniment of the process. However, as Mr. Miller has pointed out, by proper preliminary measures, pre-heating, etc., these stresses can be distributed throughout a large volume and so produce no immediate undesirable result. In the finished article they may be eliminated entirely by suitable low-temperature annealing.

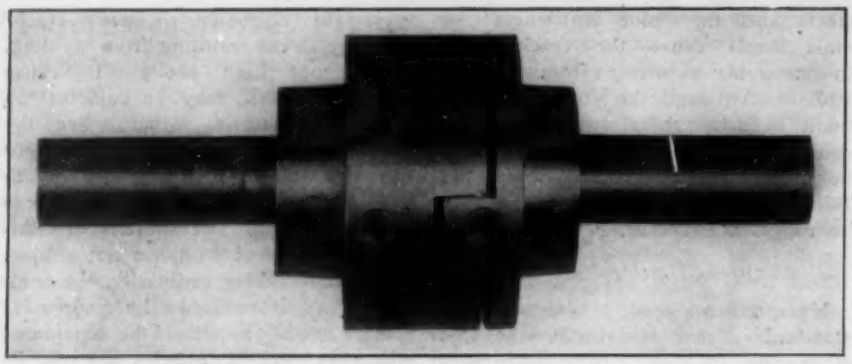
The problems connected with fusion-welding may be conveniently summarized under the following headings:

1. Production of sound cast metal

Properties of Cast Steel Produced by Different Methods

Specimen No.	Material	Tensile Properties: Elastic properties Pounds per square inch	Tensile Properties: Ultimate tensile strength Pounds per square inch	Tensile Properties: Elongation Per cent	Fatigue-resisting Properties: Reduction of area Per cent	Fatigue-resisting Properties: Maximum fiber stress Pounds per square inch	Fatigue-resisting Properties: Number of revolutions	Fatigue-resisting Properties: Results	Toughness m kg.
1	Cast steel: Carbon 0.10, manganese 0.23	23,900 Y.P.	50,000	35 (2-inch)	47.8	.....	.....	.....	2.5 (Fremont)
2	Same as 3.3 hours, 900 degrees Cent. air cooled in 40 minutes	28,750 Y.P.	55,400	38.5 (2-inch)	67.0	.....	.....	.....	20.0 (Fremont)
3	Cast steel: Carbon 0.23, manganese 1.07; quenched 900 degrees Cent., water tempered 680 degrees Cent.	44,400 Y.P.	67,200	14.2 (2-inch)	31.3	28,270 38,870	10,475,000 619,700	Broke	32.0 (Fremont)
4	Cast steel: Carbon 0.21, manganese 1.17; treatment same as No. 3	71,650 Y.P.	91,900	20.4 (2-inch)	50.2	.....	.....	.....	21.0 (Fremont)
5	Cast steel: Carbon 0.11, manganese 0.88	26,000 Y.P.	58,500	25.9 (a)	30.0	.....	.....	.....	3.64 (Charpy)
6	Same as 5, annealed 920 degrees Cent.	37,000 Y.P.	60,000	29.9 (a)	59.2	.....	.....	.....	17.16 (Charpy)
7	Thermit steel composition not stated	54,420 E.L.	80,500	23.5	42.5	.....	.....	.....	.....
8	Arc-fused Steel (before) (after) Carbon ..... 0.002 0.017 Manganese ..... 0.038 0.023 Nitrogen 0.004 0.13	23,800 P.L. 35,000 Y.P.	50,650	7.5 (2-inch)	12	.....	.....	.....	.....
9	Arc-fused Steel (before) (after) Carbon ..... 0.15 0.025 Manganese ..... 0.47 Tr Nitrogen 0.003 0.14	27,250 P.L. 34,450 Y.P.	51,550	9.5 (2-inch)	9	.....	.....	.....	.....
10	Same as 8 stressed perpendicularly to deposition layers	22,500 Y.P.	39,500	4 (2-inch)	3	.....	.....	.....	.....
11	Arc-fused steel, from covered electrode	40,700 E.L.	56,800	15 (8-inch)	....	28,500 25,600 24,850 24,200 24,200 20,600	321,000 492,100 5,570,000 11,000,000 731,000 1,413,000	Broke in fillet Broke in fillet Without fracture Without fracture Broke just outside fillet Broke 0.3-inch from fillet	.....
12	Same as 11 annealed	26,000 E.L.	52,200	19 (8-inch)	....	.....	.....	.....	.....
13	Arc-fused steel, stressed parallel to deposition layers	28,250 E.L. 34,630 Y.P.	56,800	17.4 (2-inch)	27.3	.....	.....	.....	.....
14	Same as 13, stressed perpendicularly to deposition layers	22,125 E.L. 29,125 Y.P.	42,180	4.6 (2-inch)	11.4	.....	.....	.....	.....
15	Same as 14 after being forged from (1½-inch)² to (1-inch)²	28,000 E.L. 31,600 Y.P.	56,900	27.6 (2-inch)	59.6	.....	.....	.....	.....

(a) Gage length equals 10 times diameter. Y.P., yield point; E. L., elastic limit; P.L., proportional limit.



A FLEXIBLE SHAFT COUPLING SHOWN JOINING TWO SHAFTS

by the elimination of seams, layers, holes and, as far as possible, oxidation.

2. Improvement of the properties of the cast metal by the choice of suitable compositions since the improvement by heat-treatment is not practicable generally.

3. Allowance for the unavoidable internal weld stresses during welding so that they are not concentrated at the weld and whenever practicable the elimination from the article after the welding has been completed by proper annealing or other suitable treatments.

Designs Simple Flexible Shaft Coupling

Simplicity of installation is a feature of an improved type of flexible shaft coupling recently developed. Flexibility is obtained from a free turning motion around hardened steel pins and from a sliding motion in a tongue and groove arrangement. It is said to maintain a uniform angular velocity ratio between the two shafts through any degree of angular misalignment or through lateral misalignment. In assembling, the two sliding members are pushed into position. Being built of heat treated machine steel, the couplings for any particular shaft size will carry the full allowable load of the shaft. The principle of operation is such that with slight changes in construction, positive transmission with a uniform angular velocity ratio can be obtained between shafts set at any angle up to 90 degrees. As an angular drive, it is not necessary that the shaft ends be in perfect alignment. The coupling is made in three types. The first type, shown in the accompanying illustration, consists of two hubs properly keyed to receive the shaft ends, bearing pins driven transversely into each hub, and two rings which fit over the pins and engage with one another by means of a tongue and groove construction. The second type is the same as the first except that the pins are driven directly into the shaft ends and the hubs are omitted. The third type is the same as the second except that the pin in one of the shaft ends engages directly in the slotted ring carried by the other shaft end. C. H. Breaker, Indianapolis, is general sales manager for the new device.

To assist in the conduct of engineering research and to extend and strengthen the field of its graduate work in engineering, the University of Illinois, Urbana, Ill., maintains 14 research graduate assistantships in the engineering experiment station. Two other such assistantships have been established under the patronage of the Illinois Gas association. These assistantships are open to graduates of approved American and foreign universities and technical schools who are prepared to undertake graduate study in engineering, physics, or applied chemistry. Dean C. R. Richards will accept applications for these assistantships up to March 1, 1922.

Develops New Reversing Valve for Gas

A new air and gas reversing valve manufactured by the W. R. Miller Co., Pittsburgh, although extremely simple in construction possesses a number of advantages. Figs. 1 and 2 show two sketches of a 27-inch valve of the new type. As shown by Fig. 2 the flapper plate is so designed that gases can not pass to the stack while the valve is being reversed. It is claimed that no burning out occurs through the valve. In event of replacement easy access is gained to the interior.

The flapper and wall plates are of welded steel and are water filled. The bottom seal which rests on the brick walls can be either a casting for air circulation or welded steel for water cooling. For the large sizes of the valve, a small motor can be attached to the reversing lever to provide both hand and power operation. The lever rests against wood or other material which serves as a cushion. This reversing level is shown to the left in Fig. 1.

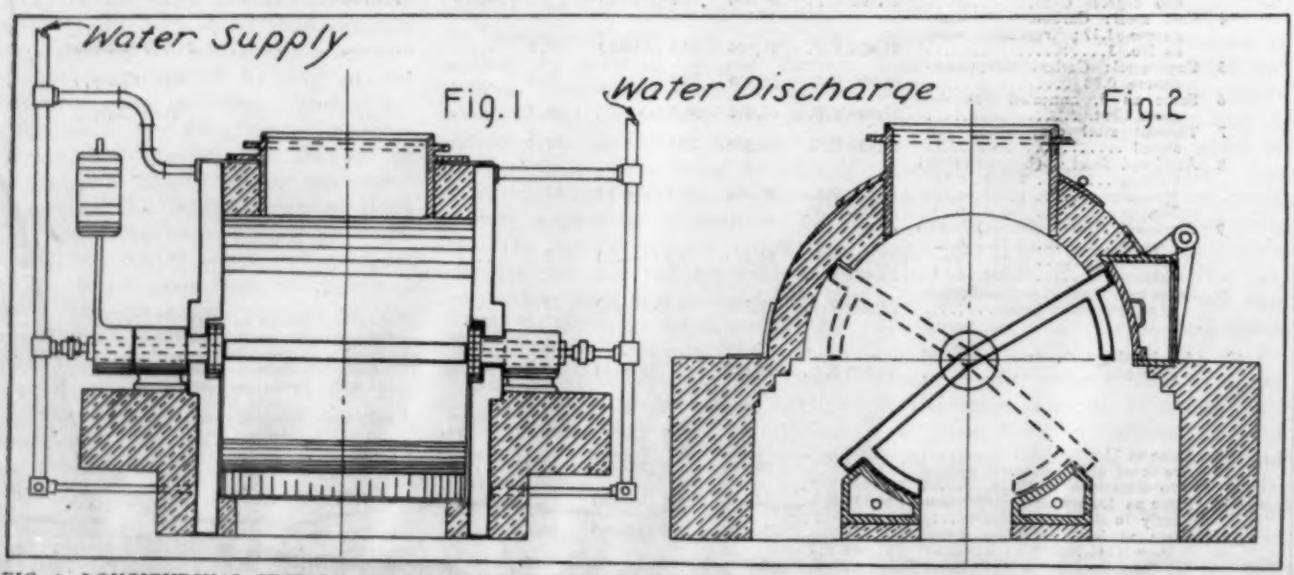
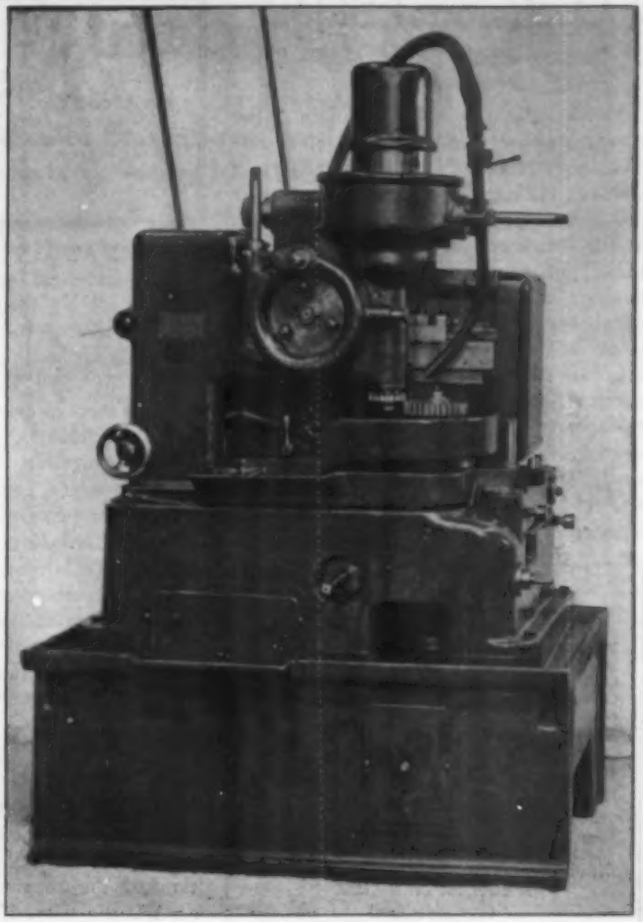


FIG. 1—LONGITUDINAL SECTION THROUGH AIR AND GAS REVERSING VALVE WITH OPERATING LEVER AT LEFT END.
FIG. 2—TRANSVERSE SECTION OF THE VALVE SHOWING THE WATER-FILLED FLAPPER PLATE AND ITS TWO POSITIONS

Builds Drilling Machine for Special Work

A new drilling machine recently designed by the Manufacturers' Consulting Engineers, Syracuse, N. Y., is somewhat unusual in construction as well as in application. As shown by the accompanying illustration, it is of the horizontal type and slightly resembles a lathe. The function of the machine is to drill three holes in each end of gasoline engine crankcases and to bore one hole for the starter or generator simultaneously. Considerable saving is effected by the completing of these three similar operations at the same time.

Operation of the machine is simple. It consists of the main bed on which is mounted a driving motor and two movable heads which are fed in opposite directions by a hand lever similar to the feed lever of a drill press. These heads contain a number of drills and a boring head, the number of drills and boring heads used depending upon the character of the operation. Since most automobile engines at the present time are equipped with a starter and generator, the new machine should find a good field for service in automotive work.



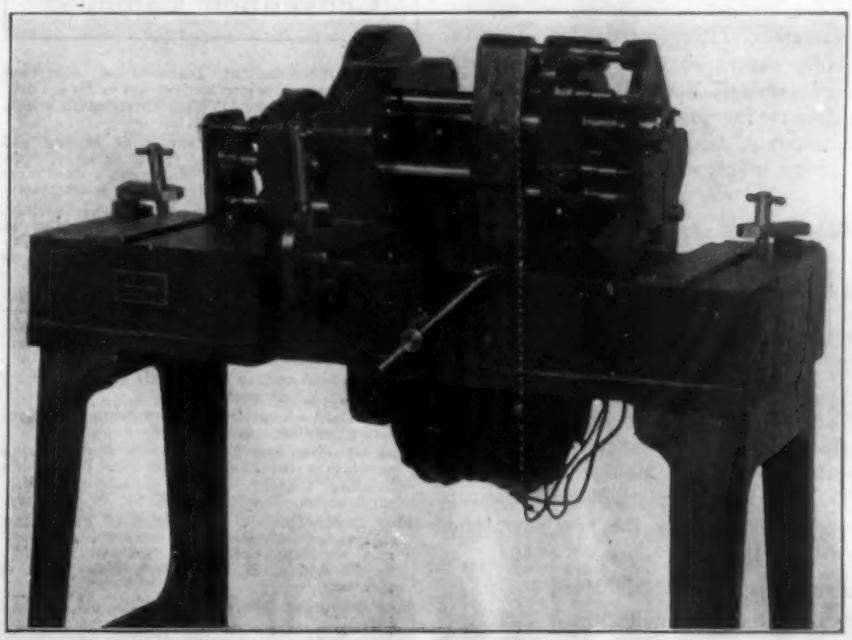
FRONT VIEW OF NEW HIGH SPEED GEAR SHAPER READY FOR OPERATION

High Speed Gear Shaper Has Wide Range

Although designed primarily for the requirements of cutting a large number of gears of the same size, a new high speed gear shaper built by the Fellows Gear Shaper Co., Springfield, Vt., can be adapted to many classes of work by slight modifications. It is a production machine in that a large variety of work can be handled simply by the employment of suitable work-holding fixtures. Provision has been made to handle both external and internal work, and to secure feeds and speeds best suited. A special feature of the machine, which is shown in the accompanying illustration, is that it can take roughing and finishing cuts automatically, in one setting and with the same cutter.

In principle, the operation of the machine is fundamentally the same as that of the standard gear shaper in that a gear-type cutter working on the generating principle is used. Standard gear shaper cutters are used, the teeth of which are generated with precision after hardening. Owing to the high speed at which the cutter is operated and also the short stroke of the machine, gauging of gears is not necessary except for thin types. Provision has been made for the installation of individual motor drive, in which case a bracket is fastened to the top of the machine, driving the crankshaft through the main pulley and belt. A 1-horsepower motor provides sufficient power for operating a single machine, but when a group of these machines is installed, a more economical method is to bolt the machine bases together and operate them as a unit, a 6-horsepower motor furnishing ample power for 10 machines.

Contact of the cutters with work is so short that the cutter does not heat up and thus can be used for both roughing and finishing cuts. The general practice is to use heavy feeds and slow speeds for roughing, and finer feeds and higher speeds for finishing. In adapting the shaper to the cutting of internal gears, a special crank arm is placed on the machine due to the fact that the cutter must work on the right-hand side of the center of the work spindle.



THIS MACHINE COMPLETES THREE CRANKCASE DRILLING OPERATIONS SIMULTANEOUSLY

Japanese iron makers plan to limit iron exports to revive the industry from the slump suffered from abundant imports during the boom period.

Occasional Sales

Of 200,000 Brick Being Made—Some Prices Advance

Pittsburgh, Jan. 24.—Paralleling the recent quietness in iron and steel circles, the refractory makers report a similar falling in demand for their products since the first of the year. While many consumers are maintaining their policy of piecemeal buying, a number of others are increasing their purchases taking from 50,000 to 100,000 brick at a time, while occasionally a sale of 200,000 brick to one user is noted. Steel corporation units continue to specify in fair sized amounts as needed. Stocks in hands of users generally are known to be low and brick makers extract considerable encouragement from that fact. Maximum quotations have advanced in one or two instances in connection with fireclay brick. Pennsylvania No. 1 brick now is quotable at $32 to $37, instead of $32 to $35, since there appears to be no substantiation of a $30 price as reported elsewhere recently. One maker of Missouri high grade brick is quoting $42, so that the full range of the market is $37 to $42. Some $27 brick has appeared in Maryland on the other hand so that Maryland No. 2 brick recently quoted at $27.50 to $30, now is quotable at $27 to $30. Pennsylvania silica brick is being held at $30, with few sales, although up until recently $28 was available. In connection with magnesite brick some quotations at $50 per net ton are current at present, whereas two weeks ago $53 was the market's minimum. Others are quoting up to $55. Chrome brick is unchanged, although in one or two cases, with special circumstances governing, $40 was quoted as against the usual $43 to $45 prices.

Fire Clay Brick

(Per 1000 f.o.b. works)

Pennsylvania, No. 1	$32.00 to 37.00
Pennsylvania, No. 2	28.00 to 32.00
Ohio, No. 1	32.00 to 35.00
Ohio, No. 2	28.00 to 32.00
Illinois, No. 1	35.00 to 38.00
Illinois, No. 2	30.00 to 35.00
Kentucky, No. 1	32.00 to 35.00
Missouri, high grade	37.00 to 42.00
Maryland, No. 1	32.00 to 40.00
Maryland, No. 2	27.00 to 30.00

SILICA BRICK

Pennsylvania	$30.00
Chicago	35.00 to 38.00
Birmingham	40.00

MAGNESITE BRICK

(Per Net Ton)

9 x 4½ x 2½	$50.00 to 55.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	$41.00 to 44.00

The Wedgerite Piston Ring Co. of Plattsburgh, N. Y., has filed a petition in bankruptcy with liabilities of $59,474 and assets of $14,049.

News of Societies

Past and Coming Meetings of National and Local Trade and Technical Organizations

FORMATION of an association of technical societies will be discussed at the City club, Boston, Jan. 24, and if the plan is acted upon favorably, it will comprise the Boston Society of Civil Engineers, New England Water Works association, Plant Engineers club, and the local sections of the American Institute of Electrical Engineers, American Society of Mechanical Engineers, American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Heating and Ventilating Engineers, American Association of Engineers, together with other technical and scientific societies in Boston, which may decide to join later.

* * *

Announces Convention Date

According to an announcement by the American Society for Testing Materials the twenty-fifth annual convention of that organization will be held at Atlantic City, N. J., June 26 to July 1. Headquarters will be at the Chalfonte-Haddon Hall hotel.

* * *

Practicing Engineers Will Meet

Practicing engineers will hold a conference in Washington, Feb. 22, under the auspices of the American Association of Engineers. Attendance is not limited to members of the organization. The tentative program includes papers on how to sell engineering service, licensing of engineers, publicity for practicing engineers, cost accounting, bookkeeping for an engineering office, etc.

* * *

Chicago Foundrymen Elect

Officers of the Chicago Foundrymen's club for 1922 were elected at a meeting held recently in that city. The new officers are: President, John E. Schindler, Garden City Foundry Co., Chicago; vice president, George E. Carlin, United Boiler & Foundry Co., Hammond, Ind.; secretary and treasurer, George H. Manlove, THE IRON TRADE REVIEW. Retiring directors were re-elected for the two year term.

* * *

Architects To Exhibit Models

The annual exhibit of the Architectural League of New York will be opened in the Fine Arts building, 215 West Fifty-seventh street, New York, Feb. 3, and the public exhibition will commence Feb. 5, and continue until March 4, inclusive. The exhibition this year will include drawings and models of proposed and executed work, both in architecture and the allied arts, and also specimens of decorative painting, furniture, metal work and ceramics.

* * *

Civil Engineers Name Officers

At the sixty-ninth annual meeting of the American Society of Civil Engineers held recently elections resulted as follows: President, John R. Freeman, Providence, R. I.; vice presidents, C. E. Grunsky, San Francisco; Robert Ridgeway, New York. Directors selected include: C. M. Holland, New York; Joseph J. Yates, Jersey City, N. J.; F. E. Windsor, Providence, R. I.; J. N. Chester, Pittsburgh, Pa.; A. J. Dyer, Nashville, Tenn.; W. L. Huber, San Francisco. Honorary memberships were conferred on Charles Prosper, Eugene Schneider, Paris, France; Luigi Luiggi, Rome, Italy; Samuel Rea, president of the Pennsylvania railroad; Howard Swasey and Howard A. Carson.

Convention Calendar

Feb. 15-17—American Institute of Electrical Engineers, mid-winter convention in New York. F. L. Hutchinson, 33 West Thirty-ninth street, New York, is secretary.

Feb. 20-25—American Institute of Mining and Metallurgical Engineers, spring meeting, New York. Frederick F. Sharpless, 29 West Thirty-ninth street, New York, is secretary.

Feb. 27-March 2—American Ceramic society, will hold twenty-fourth annual convention at St. Louis. Ross C. Purdy, Ceramics building, Ohio State univresity, Columbus, O., is secretary.

March 3—American Society for Steel Treating, sectional meeting, Engineering Societies building, 29 West Thirty-ninth street, New York. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

April 4-7—American Chemical society, spring meeting, Birmingham, Ala.

April 27-29—American Electrochemical society spring meeting in Baltimore.

May 4-5—Iron and Steel institute, annual spring meeting at the Institution of Civil Engineer's building, London. George C. Lloyd, 28 Victoria street, London, S. W. 1, is secretary.

May 15-20—National Association of Purchasing Agents, seventh annual convention also exposition at Exposition park, Rochester, N. Y. L. F. Boffey, 19 Park place, New York, is secretary.

June 26-July 1—American Society for Testing Materials, twenty-fifth annual meeting, Chalfonte-Haddon Hall hotel, Atlantic City, N. J. C. L. Warwick, 1315 Spruce street, Philadelphia, is secretary.

Export Groups More Complete

Reclassification of Commodity Schedules Gives New Listings—Iron and Steel and Machinery Lists Expanded Under Revised Statistics—Booklet Shows Regroupings and Gives Regulations Covering Monthly Returns

WASHINGTON, Jan. 24.—Details of the complete reclassification of export schedules, together with regulations covering the statistical returns of exports of domestic commodities, are published in a booklet entitled "Statistical Classification of Domestic Commodities Exported" and issued by the bureau of foreign and domestic commerce.

Among the groups as now classified and enlarged by the further listing of commodities, and in effect Jan. 1, are group 6, covering ores, metals and manufactures except machinery and vehicles, and group 7, covering machinery and vehicles. Group 6, as applying to iron and steel and alloys, ommitting the nonferrous schedules, is as follows:

IRON AND STEEL

Class No.	Commodity	Unit of quantity
6001	Iron ore	Ton
6005	Iron and steel scrap	Ton
6007	Pig iron, not containing alloys	Ton
	Steel, crude and semifinished:	
6011	Ingots	Ton
6014	Blooms, billets and slabs	Ton
6017	Sheet and tin plate bars	Ton
	Iron and steel bars and rods:	
6021	Iron and mild steel bars, not containing alloys	Lb.
6025	Steel bars, containing alloys	Lb.
6027	Wire rods	Lb.
6029	Other iron and steel rods	Lb.
	Iron and steel plates, sheets, skelp and strips:	
6030	Boiler plate, iron or steel	Lb.
6031	Other steel plates, not fabricated	Lb.
6032	Skelp iron or steel	Lb.
6033	Other iron plates	Lb
6034	Iron or steel sheets, galvanized	Lb.
6035	Steel sheets, black	Lb.
6036	Iron sheets, black	Lb.
6037	Strips of steel, cold rolled	Lb.
6038	Hoop, band and scroll iron or steel	Lb.
6040	Tin plate, terne plate and tagger's tin	Lb.
	Heavy structural shapes, over 3 inches leg or web—	
6045	Not fabricated	Ton
6046	Fabricated	Ton
6047	Ship and tank plates, punched or shaped	Lb.
6049	Other structural forms	Lb.
	Railway track and material:	
6051	Rails, 50 pounds per yard and over	Ton
6052	Rails, less than 50 pounds per yard	Ton
6054	Rail joints, splice bars, fishplates and tie-plates	Lb.
6055	Switches, frogs and crossings	Lb.
6058	Railroad spikes	Lb.
6059	Railroad bolts, nuts, washers and nut locks	Lb.
	Tubular products and fittings:	
6061	Boiler tubes	Lb.
6062	Casing and oil line pipe	Lb.
6063	Welded black pipe	Lb.
6064	Welded galvanized pipe	Lb.
6065	Malleable iron pipe fittings	Lb.
6066	Cast iron pipe	Lb.
6067	Cast iron pipe fittings	Lb.
	Wire, and manufactures of:	
6081	Plain iron or steel wire	Lb.
6082	Galvanized wire	Lb.
6083	Barbed wire	Lb.
6085	Woven-wire fencing	Lb.
6086	Wire cloth and screening	Lb.
6087	Wire rope and cable	Lb.
6088	Insulated wire and cable	Lb.
6089	Other wire, and manufactures of	Lb.
	Nails, screws and bolts (except railroad):	
6091	Cut nails	Lb.
6092	Wire nails	Lb.
6093	Horseshoe nails	Lb.
6095	Other nails, including tacks	Lb.
6096	Wood screws	Gross
6097	Machine screws	Lb.
6099	Bolts, nuts, rivets and washers, except railroad	Lb.
	Castings and forgings:	
6101	Malleable iron castings	Lb.
6103	Other iron castings	Lb.
6105	Car wheels and axles	Lb.
6107	Shells and projectiles, empty	Lb.
6108	Steel castings	Lb.
6109	Iron and steel forgings	Lb.
	Cutlery:	
6111	Razors, straight blades	Doz.
6112	Razors, safety	Doz.
6113	Safety razor blades	Doz.
6114	Scissors and shears	Doz.
6116	Pen or pocket knives	Doz.
6117	Table and kitchen cutlery	Doz.
6119	Other cutlery and parts of	Lb.
	Hollow ware:	
6121	Tinware	Lb.
6122	Tin cans, finished or unfinished	Lb
	Enameled ware of iron or steel:	
6124	Bath tubs	No.
6125	Closet bowls, lavatories and sinks	No.
6126	Enameled household ware	Lb.
	Metal furniture and fixtures:	
6131	Filing cases	No.
6133	Safes	No.
6135	Other office furniture and fixtures	Lb.
6139	Other metal furniture	Lb.
	Stoves and furnaces, except electric:	
6141	Cooking stoves and ranges	No.
6142	Heating stoves	No.
6143	Gas stoves, ranges and water heaters	No.
6144	Oil and gasoline stoves	No.
6145	Warm-air heating furnaces	No.
6146	Steam and hot-water heating boilers and radiators	Lb.
	Tools:	
6151	Axes	No.
6152	Saws	No.
6153	Augers, bits and drills	Lb.
6155	Files and rasps	Doz.
6156	Hammers and hatchets	No.
6159	Mechanics' tools, n.e.s.	Lb.
6162	Shovels and spades	No.
6169	Other tools, n.e.s.	Lb.
	Firearms and ordnance:	
6171	Revolvers and pistols	No.
6172	Rifles	No.
6173	Shotguns	No.
6176	Machine and heavy ordnance guns and carriages	No.
6179	Parts of guns	Lb.
	Hardware:	
6181	Locks	Lb.
6182	Hinges	Lb.
6183	Other builders' hardware	Lb.
6184	Furniture hardware	Lb.
6185	Saddlery and harness hardware	Lb.
6186	Car and marine hardware	Lb.
6188	Other hardware	Lb.
6189	Needles, hand and machine	M.
6190	Ball and roller bearings, and parts of	Lb.
	Chains:	
6191	Sprocket and other power transmission	Lb.
6192	Other chains	Lb.
6193	Scales and balances	No.
6194	Horseshoes	Lb.
6195	Anvils	Lb.
6196	Anchors	Lb.
6209	Other manufactures of iron or steel	Lb.

FERROALLOYING METALS

6210	Ferrosilicon, containing above 40 per cent silicon	Ton
6213	Ferromanganese, containing above 45 per cent manganese	Ton
6214	Spiegeleisen (15 to 45 per cent manganese)	Ton
6222	Ferrochrome and chrome metal	Ton
6231	Tungsten ores and concentrates (tungsten contents)	Lb.
6233	Ferrotungsten and tungsten metal	Lb.
6292	Ferrovanadium	Lb.
6299	Other ferroalloys	Lb.
	Nickel:	
6541	Oxide and matte	Ton
6544	Nickel	Lb.
6545	Monel metal and other allows	Lb.
6549	Nickel manufactures	Lb.

TIN

6802	Tin in bars, blocks or pigs	Lb.

OTHER METALS AND ALLOYS

6910	Nickel or German silver in bars, rods or sheets	Lb.
6920	Babbitt metal	Lb.
6940	Other metals and alloys, n.e.s.	Lb.
6950	Plated ware, other than gold or silver	Lb.
6970	Type	Lb.
6991	Other manufactures of metals and metal compositions, n.e.s.	Lb.

The machinery and vehicles group is as follows:

Class No.	Commodity	Unit of Quantity
	POWER GENERATING MACHINERY, EXCEPT ELECTRIC	
	Steam engines:	
7011	Stationary, except turbines	No.
7012	Marine, except turbines	No.
7013	Turbines	No.
7014	Locomotives	No.
7015	Traction, except agricultural	No.
7021	Oil cups and oil feeders	Lb.
7025	Air brakes and pumps	No.
7029	Other engine accessories and parts	Lb.
7031	Boilers	H. P.
7035	Condensers, heaters, and accessories	Lb.
7039	Injectors, gages, safety valves, and other boiler accessories and parts	Lb.
	Internal combustion engines:	
7041	Gas engines	No.
	Stationary:	
7042	Diesel and other heavy oil	No.
7043	Other stationary	No.
	Marine:	
7044	Diesel and other heavy oil	No.
7045	Other marine	No.
7046	Automobile	No.
7047	Aircraft	No.
7048	Complete tractors, except agricultural	No.
7055	Other internal combustion engines	No.
7059	Accessories and parts for	Lb.
	Water wheels and turbines:	
7062	Under 500 horsepower	No.
7063	500 horsepower and over	No.
	CONSTRUCTION AND CONVEYING MACHINERY	
7201	Steam and other power shovels	No.
7205	Dredging machinery	Lb.
7209	Pile drivers	No.
7215	Concrete mixers	No.
7221	Road plows, scrapers and rollers	No.
7225	Tar and oil spreaders	No.
7231	Other construction equipment	Lb.
7235	Cranes	No.
7239	Hoists and derricks, except mining	No.
7245	Elevators, freight and passenger	No.
7249	Conveyers, bucket, chain or belt	No.
7291	Other conveying equipment	Lb.
	MINING, OIL WELL AND PUMPING MACHINERY	
	Mining and quarrying machinery:	
7311	Rock drills	No.
7315	Mine hoists and derricks	No.
7321	Ore crushing and screening machinery	Lb.
7325	Amalgamation, flotation and other concentrating machinery	Lb.
7331	Smelting and roasting machinery	Lb.
7339	Other mining and quarrying machinery	Lb.
	Oil well machinery:	
7341	Well-drilling apparatus	Lb.
7349	Other oil well machinery	Lb.
	Pumps:	
7355	Centrifugal pumps	No.

7358	Steam pumps	No.
7361	Other power pumps	No.
7365	Hand pumps	No.
7369	Other pumps and pumping machinery	Lb.
	METAL WORKING MACHINERY	
7401	Lathes	No.
7405	Boring and drilling machines	No.
7409	Planers, shapers and slotters	No.
7412	Bending and power presses	No.
7415	Gear cutters	No.
7419	Milling machines	No.
7422	Sawing machines	No.
7429	Thread cutting and screw machines	No.
7432	Punching and shearing machines	No.
7435	Power hammers	No.
7441	Rolling machines	No.
7445	Wire drawing machines	No.
7455	Polishing and burnishing machines	No.
7461	Sharpening and grinding machines	No.
7471	Chucks, centering, lathe, drill and other	No.
7475	Reamers, cutters, drills and other parts for machine tools	Lb.
7481	Pneumatic portable tools	No.
7491	Foundry and molding machinery	Lb.
7499	Other metal working machinery and parts of	Lb.
	TEXTILE, SEWING AND SHOE MACHINERY	
	Textile machinery:	
7505	Knitting machines	No.
7514	Cotton carding and spinning machinery	No.
7515	Cotton looms	No.
7519	Other cotton machinery	Lb.
7529	Wool carding and weaving machinery	Lb.
7539	Silk machinery	Lb.
7549	Other textile and textile finishing machinery	Lb.
7575	Shoe machinery, except sewing	Lb.
	OTHER MACHINERY, EXCEPT AGRICULTURAL	
7605	Flour mill and grist mill machinery	Lb.
7609	Rice mill machinery	Lb.
	Sugar mill machinery:	
7611	Cane and bagasse conveyers	No.
7612	Cane mills	No.
7615	Centrifugals	No.
7619	Other sugar mill machinery	Lb.
7621	Pulp mill machinery	Lb.
7625	Paper mill machinery	Lb.
7631	Sawmill machinery	Lb.
7639	Other woodworking machinery	Lb.
7645	Brewers' machinery	Lb.
7651	Refrigerating and ice making machinery	Lb.
7661	Oil mill machinery	Lb.
7710	Air compressors	No.
	Laundry machinery:	
7737	Power machines	No.
7738	Other	No.
7791	Printing presses	No.

Reports Oil Reserves

Washington, Jan. 24.—Nine billion barrels of oil recoverable by methods now in use were in the ground in the United States on Jan. 1, according to an estimate by the geological survey and the American Association of Petroleum Geologists. Unlike reserves of coal, iron and copper, which are so large that apprehension of their earlly exhaustion is not justified, the oil reserves appear adequate only for a limited number of years as annual production now is almost a half-billion barrels and consumption has long passed that mark, the survey states. The largest reserves are the Gulf coast, Texas and Louisiana, credited with 2,100,000,000 barrels, California with 1,850,000,000 and Oklahoma with 1,340,000,000.

Tests Low Grade Ores

Washington, Jan. 24.—Much experimental work has been done at the intermountain experiment station of the federal bureau of mines at Salt Lake City on low grade and complex ores to determine the fineness of grinding, oils and reagents necessary to give the highest recoveries of the metals, states a bulletin by the bureau. As an illustration of the nature of the work the bureau states: "Co-operative experimental tests on a 1000-pound sample of representative vanadium ore from the Good Springs district, Nev., indicated that in order to recover a good grade of vanadium the ore must be crushed to pass a 48 to 60 mesh screen in order to separate the greatest amount of limestone gangue from the vanadium mineral. A recovery of 60.2 per cent V_2O_5 was obtained. This result is very good for the class of ore treated."

Obituaries

JOSEPH HILL, one of the founders of the Winchendon Foundry, Winchendon, Mass., iron founders, now operated by the Goodspeed Machine Co., died at his home there, Jan. 16, at the age of 88 years. The company was first known as Hill & Bosley and on the death of Andrew Bosley, Mr. Hill operated the business alone until three years ago, when he retired.

Frank P. Christe, pioneer iron and steel man in Detroit and president of the Christe-Kline Forge & Machine Co., Detroit, died in that city Jan. 16 at the age of 64 years.

Cornelius Callahan, inventor of a fire nozzle now used generally and for 30 years a manufacturer of fire hose, died at his home in Canton, Mass., Jan. 15, aged 84 years.

Nicholas F. Palmer, president of the Quintard Iron Works, with offices at 40 Wall street, New York, died Jan. 18, at his home in New York, after about two weeks' illness of pneumonia. Mr. Palmer was 47 years old. He was an officer of the Alberger Pump & Condenser Co. and other interests.

Martin H. Kilgallen died recently in Chicago. He was 63 years old and went to Chicago as a boy from Ireland. He obtained work in the South Chicago steel mills, rose to the position of foreman and eventually through careful investment became a millionaire.

He practically built Chicago Heights from a barren prairie tract and established that city on its present firm basis.

Charles Willard Jones, for more than 30 years chief engineer for Charles H. Field, Providence, R. I., builder of machinery, died unexpectedly at his home in that city, Jan. 17, aged 64 years. Although he had been in ill health for the last four years he had not retired from active work, and remained at his post until his death.

Robert M. Keating, inventor of a bicycle which he built in Springfield, Mass., and later in Holyoke, Mass., and Middletown, Conn., died in Springfield Jan. 20, aged 55 years. He owned a controlling motorcycle patent and also had invented a sanitary flush valve that has been largely adopted.

Richard Summerville Staples, assistant treasurer and metallurgist of the Warren F. Fraser Co., Westboro, Mass., builder of grinding machinery, died in a hospital in Woonsocket, R. I., Jan. 16, following an operation for appendicitis. He was 41 years old. Before going to the Westboro company last month, Mr. Staples was for five years metallurgist for the Taft-Pierce Mfg. Co., Woonsocket, R. I., going there from the Packard Motor Car Co., Detroit.

William H. Bradley, since 1886 chief engineer of the Consolidated Gas Co., New York, died suddenly Jan. 18. He was born in New Haven, Conn. in 1838; early in life he was a construction engineer with the Continental Iron Works of Brooklyn and in this connection he assisted in building Ericksson's MONITOR. After the Civil war, he rejoined the company and erected many gas plants. Later he acted as engineer for gas companies in greater New York. He designed every detail of the Consolidated company's plant in Astoria, L. I., which is the largest of its kind in the world. Mr. Bradley in 1909 and 1910 was president of the American Gas institute.

G. G. Hartley, prominent among the men who developed the Mesabi iron range in Minnesota, died Jan. 17 at the age of 68 years. For 50 years he was active in the ore regions, going to Brainerd, Minn., at the age of 18 years, from Shogomack, N. B., his birthplace. He first engaged in logging, later becoming a logging contractor. He owned lands in Minnesota and North Dakota and real estate in Duluth when the Mesabi range was discovered. He had important interests in the Mesabi, chiefly between Nashwauk and Grand Rapids. He was associated with the late Chester B. Congdon, was interested in agriculture and livestock, was a constructive factor in the development of the state and of Duluth industrially, and had been active in politics.

Steel Exports Lowest since 1914

Aggregate of 1921 Overseas Shipments Reaches Only 2,212,318 Tons—December Tonnage Shows Monthly Trend Continues Upward—Imports Drop to Smallest Tonnage of Modern Industry—Ore Receipts Also Decline

IRON and steel exports in 1921 amounted to only 2,212,318 tons, the smallest tonnage shipped out of the United States since 1914 when 1,549,554 tons were exported and the second smallest tonnage of exports since 1910 when the total was only 1,537,943 tons. From 1920, the 1921 tonnage represents a decline of 56 per cent.

The year also had the smallest monthly tonnage since January, 1909. That was in August, when the exports of iron and steel products dropped to 75,641 tons. The August figure was particularly noticeable in that the year started with the January figure at 546,402 tons. The decline had been steady month by month.

The December exports of iron and steel totaled 134,348 tons. While this was a decline of 73 per cent from the December, 1920, tonnage, it is an increase of 8906 tons over November last year and represents the fourth successive increase since the August low point, a gain of 58,707 tons over the four months. The month's business overseas indicates a steady upward trend.

In only two products was the 1921 export tonnage able to show an increase over 1920. These were in pipes and fittings and in sheets. The pipe total was 393,800 tons in 1921 and it was 353,189 tons in 1920, an advance of more than 40,000 tons. The sheet figures were 193,433 tons last year and 169,243 tons in 1920, an increase of 24,190 tons.

Perhaps the greatest decrease in the tonnage of any product was in billets, blooms and ingots, the year's total, 10,363 tons, comparing with 216,873 tons in 1920, a drop of 206,510 tons. The decline in pig iron was from 212,742 tons to 27,247 tons; in scrap iron and steel from 219,250 tons to 37,117 tons; steel rails from 594,628 tons to 322,107 tons; steel bars from 629,051 tons to 188,463 tons; structural shapes, from 493,633 tons to 297,022 tons; plates, from 920,958 tons to 335,868 tons; and in tin plate from 226,410 tons to 107,728 tons.

Imports of iron and steel last year totaled 107,181 tons, the smallest volume in the modern history of the American steel industry. From 1920, this represents a decline of 224,709 tons. Decreases of nearly 100,000 tons in scrap and 85,000 tons in pig iron largely are responsible for this figure.

Iron ore imports dropped from 1,273,456 tons in 1920 to 315,768 tons in 1921 and imports of the various other ores and alloys declined from 714,499 tons in the earlier year to 421,217 tons in 1921. Manganese ore receipts fell from 606,937 tons to 401,354 tons. The largest decline registered in iron ore imports was in the Cuban tonnage, 1920's tonnage being 889,852 tons and last year's 123,222 tons.

IMPORTS AND EXPORTS
Gross tons

	1921 Imports	1921 Exports	1920 Imports	1920 Exports
Jan.....	17,104	546,402	45,796	333,514
Feb.....	3,672	394,638	32,279	308,846
March..	4,505	230,253	33,266	449,171
April...	4,935	162,793	26,032	395,256
May....	23,316	142,553	30,117	418,884
June....	8,260	119,021	37,260	397,420
July....	10,040	85,520	32,742	418,008
Aug....	8,069	75,641	47,483	431,211
Sept....	11,743	94,650	24,065	412,911
Oct.....	10,609	106,466	25,161	451,343
Nov....	9,296	125,492	11,153	433,092
Dec....	9,400	134,348	9,379	499,134
Total.	107,181	2,212,318	331,890	4,931,146
	1919		1918	
Jan.....	16,932	370,876	12,475	490,259
Feb.....	11,819	340,623	12,940	432,465
March..	17,750	367,314	14,312	380,062
April...	16,561	402,653	11,247	463,035
May....	18,136	414,029	14,387	488,515
June....	21,761	562,954	13,913	418,178
July....	28,258	287,685	11,789	457,118
Aug....	28,990	396,112	12,862	511,782
Sept....	37,492	363,618	9,013	473,116
Oct.....	40,698	302,362	15,552	426,458
Nov....	43,855	336,959	11,329	439,268
Dec....	39,797	254,767	28,445	357,753
Total.	322,264	4,397,295	168,264	5,338,019

IRON AND STEEL IMPORTS
(Gross Tons)

	—December— 1921	1920	Twelve months ending December 1921	1920
Pig iron.....	4,475	1,861	27,601	112,781
Scrap	1,919	4,132	41,469	140,645
Bar iron.....	237	305	1,913	4,987
Ingots, blooms and billets.	1,516	859	10,024	23,785
Structural shapes	120	206	778	1,685
Rails	894	1,623	22,048	45,684
Sheets and plates	34	95	1,976	1,792
Tin and terne terne plate..	63	56	455	400
Wire rods....	142	242	917	131
Total	9,400	9,379	107,181	331,890

IMPORTS VARIOUS ORES AND FERROALLOYS
(Gross Tons)

	—December— 1921	1920	Twelve months ending December 1921	1920
Ferromang'se.	239	5,424	9,057	59,254
Ferrosilicon ..	1,160	317	7,858	13,909
Mang. ore...	14,900	64,748	401,354	606,937
Tungsten-bearing ore.....	17	72	1,441	1,740
Nickel ore....	10	1,822	1,507	32,650
Total	16,326	72,381	421,217	714,490

IRON ORE IMPORTS
(Gross Tons)

	—December— 1921	1920	Twelve months ending December 1921	1920
Spain	....	8,911	5,602	69,915
Sweden	....	5,161	130,832	63,861
Canada	987	980	4,213	34,084
Cuba	....	74,085	123,222	889,852
Other c'ntries	1,168	28,761	51,899	215,744
Total	2,155	117,898	315,768	1,273,456

IRON AND STEEL EXPORTS
(Gross Tons)

	—December— 1921	1920	Twelve months ending December 1921	1920
Pig iron.....	2,450	9,475	27,247	212,742
Scrap	4,256	12,805	37,117	219,250
Ingots, blooms & billets...	250	3,415	10,363	216,873
Wire rods ..	3,338	4,785	18,953	116,774
Steel rails ..	14,943	52,986	322,107	594,628
Steel bars ..	14,779	63,791	188,463	629,051
Iron bars ...	132	5,803	12,338	46,627
Struc. iron and steel ..	9,422	63,474	297,022	493,633
Hoops, bands and scroll..	1,639	4,415	20,280	53,549
Galv. sheets and plates..	3,936	11,248	55,990	108,368
Iron sheets and plates.	419	1,864	12,414	32,157
Steel plates..	8,366	114,554	335,868	920,958
Steel sheets..	34,363	17,730	193,433	169,243
Ship and tank plates, punched and shaped ..	38	2,131	9,570	42,829
Tin and terne plate	9,170	20,956	107,728	226,410
Barbed wire.	876	13,928	29,976	129,710
All oth. wire.	5,787	23,103	69,336	190,969
Cut nails	59	591	1,094	3,858
Wire nails ..	3,720	12,137	28,110	93,178
All oth. nails incl. tacks.	316	1,435	4,691	12,436
Pipes & fit'gs.	14,421	52,158	393,800	353,189
R. R. spikes.	372	1,410	8,164	16,600
Bolts, nuts, rivets	1,125	4,339	24,231	38,944
Horseshoes ..	37	92	615	1,834
Cast radiators	134	509	3,408	7,336
Total	134,348	499,134	2,212,318	4,931,146

EXPORTS PIG IRON AND SEMIFINISHED
Gross tons

	1921 Pig iron	1921 Semi-finished material	1920 Pig iron	1920 Semi-finished material
Jan.....	3,926	315	18,468	19,937
Feb.....	1,307	92	15,573	22,693
March..	2,320	1,023	21,638	30,444
April...	1,243	678	14,575	19,032
May....	2,541	749	12,864	16,370
June....	1,637	1,106	16,799	29,811
July....	2,744	363	29,133	17,243
Aug....	2,419	2,447	22,362	20,920
Sept....	2,889	1,318	22,363	18,113
Oct.....	2,723	153	23,524	8,244
Nov....	1,273	1,869	13,167	7,042
Dec....	2,450	250	9,475	3,415
Total.	25,022	10,113	220,521	213,264
	1919		1918	
Jan.....	36,757	11,594	20,581	195,385
Feb.....	20,925	9,900	10,711	166,807
March..	22,158	8,176	9,849	144,443
April...	17,038	11,488	11,282	177,128
May....	37,087	20,771	22,567	159,299
June....	39,785	46,016	22,896	139,377
July....	42,327	21,318	20,265	139,612
Aug....	36,071	36,162	26,028	189,851
Sept....	18,991	37,513	34,494	135,450
Oct.....	14,108	20,718	35,452	125,023
Nov....	21,429	13,211	30,825	149,924
Dec....	14,612	21,538	24,625	63,890
Total.	27,472	10,363	219,941	213,264

Industry Is Moving Out of Lull

Basis for Confidence Seen in Depletion of Finished Stocks of Goods—Needs of Year Must be Supplied from Current Production—Seek Remedy for Farmer—Stocks Rise—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

NO SUDDEN pick-up in trade activities was to be expected with the turn of the year, and none has occurred, but January has seen industry and wholesale trade slowly expanding from the severe lull over the holiday and inventory period. The real basis for confidence in business this year lies in the easy money situation and the depleted state of finished stocks of goods. The curtailment of production was so widespread and drastic last year that shelves in most lines were swept bare by the hand-to-mouth buying policy which prevailed. As a result, consumptive requirements in 1922 must be supplied largely from current production. That is why gains have been made from the recent low point and why further substantial expansion is generally expected with the approach of spring. The total physical volume of retail trade is good, while it is noted that sales are more healthy in industrial centers than in the agricultural districts where deflation has been extreme. The depression is more pronounced in the Middle West than in the East and Northeast and on the Pacific coast.

The position of the farmer is of grave concern to every business. With a purchasing power little more than half as great as in 1913, it is clear that the agricultural districts will offer only restricted markets for industrial goods while conditions remain unchanged. The farm bloc in congress is attempting to find some solution for the agricultural situation, but the ideas of this group run to tinkering with the financial system or some other dangerous device for artificial government financial aid.

The farm conference in Washington called by President Harding also will seek some remedy. To be worth while, recovery in the farm districts must be based upon sound economic developments. More than anything else the farmer needs co-operative marketing, and less disparity in the prices between his products and the things he buys. This may be brought about by low industrial production costs, lower wages and lower freight rates. Recuperation of Europe would also give the farmers help.

The year opens with every prospect of greater building construction. Dwelling and public construction probably will continue far in the lead of industrial building. Construction costs generally are lower, with respect to materials, but liquidation of labor costs has made little headway. The record of construction awards in 1921 was only 8 per cent less than that in 1920. In December the awards for new building were 3 per cent over November and 98 per cent more than in December of 1920. The speculative outburst in the stock market last week was not convincing because of its lack of substantial leadership. It was based largely upon easier money conditions and upon the prospects for mergers in the steel, sugar and other important industries. While the movement of stocks is not to be taken as a conclusive forecasting event for business, yet it did make clear that Wall street is rapidly developing more confidence in the future. The bond market was strong, also a healthy sign. The advance of the reserve ratio of the federal reserve system to 76 per cent, the highest since early in 1917 and the continued ease of interest rates, show the great strength of the financial situation. Rediscounts at the federal reserve banks have fallen two-thirds from the peak in 1920 and note circulation is down one third. The influence of the strong impetus of cheap and ample money supplies will be felt in business more and more as the year progresses.

The foreign outlook continues somewhat obscure as a result the new French government's unyielding attitude toward Germany. Hope still is held, however, that some progress may be made in devising a plan for financial and economic stability in Europe at the international conclave at Genoa in March. The situation is such in Europe that immediate stability is hardly to be expected; Lloyd George says estimates of two or three years are too optimistic.

The Syracuse Armature & Electric Equipment Co. of Syracuse, N. Y. filed a petition in bankruptcy Jan. 18, with

The Barometer of Business

WEEKLY COMPARISON

	Last Week	Week before	One Month Ago	One Year Ago	1913
Business failures	639	719	611	485	444
Cash ratio Federal Reserve system, per cent	76	74.7	70.7	48.1	.....
Loan rate 4 to 6 months, New York, per cent..	4¼-5	4¼-5	5-5¼	7½-8	4¼-5
Bank clearings (000 omitted)	$7,184,940	$7,106,461	$6,900,000	$7,909,909	$4,500,000
Average 20 industrial stocks	$79.35	$77.52	$75.69	$73.31	$82.00
Average 40 bonds	$76.95	$77.05	$75.18	$71.44	$93.00
Car loadings (week ended Jan. 7)	605,992	531,034	697,641	830,673	$612,741

MONTHLY COMPARISON

	December	One month Before	One Year Ago	1913
Building awards 27 states.	$198,518,000	$192,311,000	$100,145,000	*$71,450,000
Business failures:				
Number	2444	1988	1525	*1336
Liabilities	$87,502,382	$53,469,839	$58,871,539	*$22,723,000
Excess of exports	$59,100,000	$84,200,000	$454,229,331	*$54,406,000
Excess of gold imports..	$29,734,000	$51,329,367	$27,602,201	†$630,716
Bureau of Labor Wholesale Price Index	149	149	189	100
Bradstreet's Index of Wholesale Prices	123.2	122.8	137.5	100
Economist's Index of British Prices	4357	4458	5924	2730
National Industrial Conference board's Cost of Living Index	162.7	163	190	100
New incorporations	$618,592,300	$367,956,100	$860,803,400	$172,301,000
Railroad net earnings	x$67,000,000	$105,000,000	$54,344,000	$59,900,000

*Monthly average. †Monthly average export excess. §1919. x November.

FOREIGN EXCHANGE (Demand)

	Normal	Last Week (closed)	Week Before	One Month ago	One Year ago
Sterling	$4.86	$4.21	$4.22	$4.14	$3.76
Francs	19.3c	8.09c	8.22c	7.83c	6.88c
Lira	19.3c	4.37c	4.43c	4.46c	3.61c
Marks	23.8c	0.50c	0.56c	0.54c	1.66c

liabilities of $12,830 and assets of $2,000.

Criticizes Foreign Sales by Barter Method

New York, Jan. 24.—Before leaving for Europe recently Charles M. Muchnic, vice president of the American Locomotive Sales Corp., criticized methods of some companies in selling their products abroad in exchange for other products rather than for cash. He said that while he was going abroad on a business mission for his company, he did not know of any business available in Europe at present.

We have refrained from the much talked of schemes of securing business by barter or the exchange of commodities, as we consider it impractical at this age," he said. "We have traveled too far along the path of civilization to revert to practices of many hundreds of years ago.

"If any European country desires to purchase certain manufactured products and has certain natural and primary commodities to sell, there are many instrumentalities, trading companies specialized in trading in such commodities. It is not the province of the manufacturer to be banker and trader in oil, glass beads, hides and lumber."

Orders Plant Sold

A formal order has been entered by John F. Harper, referee in bankruptcy at Milwaukee, providing for the sale of all of the property of the defunct John Obenberger Forge Co., Milwaukee, which a year ago was thrust into bankruptcy with liabilities of $858,972 and assets of $1,778,329. The sale probably will be set for the early part of February, depending upon adjustment of affairs. John F. Gerdis, who served as secretary of the creditors' committee prior to bankruptcy proceedings, was appointed trustee and operated the plant for about five months. Arrangements were under way to reorganize the concern as the United States Forge Co., but not all creditors agreed to the plan and as a consequence the disposition of the entire assets has now been ordered.

Drop Dolomite Merger

The reported merger of the Kelley Island Lime & Transport Co., Cleveland, and the Dolomite Products Co., Maple Grove, O., has been definitely cancelled. In a statement issued by the Dolomite company it is said that "in view of the premature announcement by the Kelley Island Lime & Transport Co., through the press and trade publications relating to a consolidation of that company with the Dolomite Products Co., we wish to state that negotiations have definitely been cancelled and the Dolomite Products Co. continues to function independently as heretofore."

Merge Wire Works

The Wire Goods Co., Worcester, Mass., has increased its capital stock from $125,000 to $1,000,000. Of the 8750 new shares, 4836 shares are to be issued as a stock dividend. At the annual meeting of the company steps are to be taken to merge the Cassidy, Fairbanks Co., Chicago, the Andrews Wire & Iron Works, Rockford, Ill., and the Andrews Wire Works, Ltd., Walford, Ont., with the Worcester company. The Washburn interests, which control the Wire Goods Co., have had holdings in the three companies for some time. The enlarged company will be operated as a Massachusetts corporation.

Estate Inventory Filed

Charles H. John, trustee of the bankrupt estate of the Northwestern Bridge & Iron Co., Milwaukee, has filed an inventory which gives the value of the property at $261,822, of which amount $122,363 is land and buildings; $63,467 represents shop equipment, machinery, etc. and $37,767 the raw steel stock. The company was made defendant in involuntary bankruptcy proceedings early in October and later filed a voluntary petition with schedules admitting liabilities of $462,822 and claiming assets of $685,266. The principal items of assets were: Insurance, $305,000; machinery and equipment, $164,538; buildings, $100,000; land, $65,000; structural steel stock, $56,455; accounts receivable $285,777. Secured creditors amount to $159,873. The largest unsecured creditor is the Bethlehem Steel Co., with a claim of $79,792.

Metals Index Unchanged

Washington, Jan. 24.—Taking 1913 prices as 100, the index number for metals and metal products for December was 119, identically that for November, compared with 157 for December, 1920. For all commodities the bureau of labor statistics placed the December index number at 149. The November figure also was 149 and that for December, 1920, 189. Of the nine commodities covered by the bureau, the index number of four decreased from November, three increased and two were stationary.

By-Products Show

Some Activity in Demand and Buying With Prices Firmer

New York, Jan. 24.—Fair quantities of ball and flake naphthalene are being purchased by the drug trade. While particular interest is being shown for spring requirements, a fair amount of spot business is going. Prices are strong at 7 to 8 cents for flakes, and 8 to 9 cents for balls, on spot and future business. Phenol continues dull with the government still offering the fresh phenol at 15 cents, f.o.b. government warehouse, and producers, the fresh phenol at 15 cents, f.o.b. works.

Strength characterizes the market on benzol, production showing little improvement and demand still coming out in fair volume. Pure benzol is quoted at 29 cents, f.o.b. works, in tanks, and at 32 to 35 cents in drums. Ninety per cent benzol is quoted at 27 cents, f.o.b. works, in tanks, and 30 to 33 cents in drums. Toluol is also steady at 30 cents in tanks, and 33 to 36 cents in drums. Solvent naphtha is unchanged at 25 cents in tanks, and 28 to 31 cents in drums. Demand for this latter product is light, with the market tending toward weakness.

A slightly better inquiry is reported in sulphate of ammonia, but prices are showing no change. Material for domestic account is being quoted at $3.20, f.o.b. producers' plants, and for foreign account, $2.55, f.o.b. port.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants in Tank Lots

Pure benzol	$0.27 to .29
Toluol	.28 to .30
Solvent naphtha	.25 to .31

Per Pound at Producers' Plants

Phenol	$0.15
Naphthalene, flake	$0.07 to $0.08
Naphthalene, balls	.08 to .09

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$2.20

(Prices on spot sulphate also quotable on business for delivery over next several months.)

Contract

Pure benzol	$0.27 to .29
Toluol	.28 to .30
Solvent naphtha	.25 to .31

Per Pound at Producers' Plants

Phenol	nominal
Naphthalene, flake	nominal
Naphthalene, balls	nominal

Per 100 Pounds at Producers' Plants

Sulphate of ammonia (12 months)	nominal

William P. Welker has been appointed receiver for the Vulcan Welding Co., Akron, O. The petition asking was filed by the Atlantic Foundry Co. The petition alleges the Vulcan Welding Co. has secured an unsecured indebtedness of more than $30,000.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

VINCENT MASSEY has been elected president of the Massey-Harris Co., Ltd., to succeed the late Thomas Findley, and Joseph N. Shenstone, vice president of the company, was elected chairman of board of directors. Thomas Bradshaw, general manager, will act as the company's chief executive officer. Mr. Massey was promoted from the post of secretary and director and is in his 35th year, having been born in Toronto, Feb. 20, 1887. He was educated in St. Andrews college, Toronto; University of Toronto from which he graduated in 1910; and Balliol college, Oxford, in which he took honors and degrees. He was lecturer in modern history at the University of Toronto and dean in residance, Victoria college from 1913 to 1915. During the world war he served as chief musketry officer and also associate secretary of the war committee of the Canadian cabinet. Later he became director of the government reparation committee.

Robert Grant, Woolworth building, New York, iron and steel merchant, has left for a short business trip to Europe.

Norman F. Brown, director of public works, Pittsburgh, has resigned to become vice president and a director of the Dravo Contracting Co., Pittsburgh.

Walter T. Layton, C. B. E., director of the National Federation of Iron and Steel Manufacturers' has resigned to become editor of the London *Economist*.

T. H. Hays has been appointed manager of the Indianapolis office of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

George W. McNear, Brookline, Mass., has been re-elected president of the Vehicle Manufacturers' association of New England.

Franklin G. Smith, president of the Osborn Mfg. Co., Cleveland, sailed from New York, Jan. 18, for an extended business trip through Europe.

George H. Sage, president of the Berlin Construction Co., Berlin, Conn., has been elected a director of the Russell Mfg. Co., Middletown, Conn.

Alfred M. Oppenheimer, president of the Apollo Steel Co., and a member of the firm of M. Oppenheimer & Co., has been elected a director of the Exchange National bank to fill the vacancy caused by the death of Albert H. Childs.

R. Sanford Riley, president of the Sanford Riley Stoker Co., Ltd., Worcester, Mass, is on a month's trip to Jamaica.

Evans F. Jones, of the Morgan Construction Co., Worcester, Mass., will sail from New York Feb. 14, for a cruise of the Mediterranean.

Jerome R. George, vice president of the Morgan Construction Co., Worcester, Mass., has retired as a director of the Merchants National bank of that city.

HOMER D. SAYRE
Who Has Been Elected Commissioner of the National Metal Trades Association

John M. Collins, vice president of the Moore Drop Forging Co., Springfield, Mass., has been elected a director of the Chapin National bank of that city.

F. J. McGrail, formerly connected with the Honolulu Iron Works, T. H. has been made foundry superintendent for the Axelson Machine Co., Los Angeles, Cal.

Earl L. Smitherman, who has been manager and superintendent of several foundries, has become associated with the Great Lakes Distributing Co., Penobscot building, Detroit, and will have charge of their sand and fire brick sales.

E. H. Ballard, the newly elected president of the New England Foundrymen's association, is manager of the Everett works of the General Electric Co., Everett, Mass.

Herbert A. Stanton, assistant treasurer in charge of credits of the Norton Co., Worcesetr, Mass., has returned from a three months business trip to Europe.

R. B. Perry, director of sales and service in the Allen Motor Co., has resigned after six years to become general sales manager of the Atlas Brass Foundry Co., Columbus, O.

W. E. Maxson, production superintendent of the Winchester Co., New Haven, Conn., for the past five years, recently resigned to enter private business.

P. LeRoy Harwood, who was one of the receivers for the Groton Iron Works, Groton, Conn., has been elected president of the newly-organized Winthrop Trust Co., of New London, Conn.

Bruce Lancaster has resigned as assistant purchasing agent of the Morgan Construction Co., Worcester, Mass., to engage in the bond business in that city.

Charles T. Quinn, who has represented the Westfield Mfg. Co., Westfield, Mass., in the South and Cuba, has resigned to operate a hotel in Worcester, Mass.

H. B. Price, advertising manager of the Belden Mfg. Co., Chicago, has resigned to join the advertising agency of George J. Kirkgasser & Co., 306 Wrigley building, Chicago.

Albert W. Smith, formerly dean of Sibley college, Cornell university, is now connected with Henry R. Kent & Co., engineers and constructors of New York and Boston, as their consulting engineer.

William K. Singleton, general manager of sales of the Carnahan Tin Plate & Sheet Co., Canton, O., effective Jan. 15 became identified with the tin plate division of the American Steel Co., Pittsburgh.

Robert H. Spahr, director of educa-

tion for the Winchester Repeating Arms Co., New Haven, Conn., has been appointed instructor in foremanship at the Springfield, Mass., division of Northeastern University.

William C. Robinson, president of the National Metal Molding Co., Pittsburgh, was elected a director of the Mellon National bank of that city at a recent meeting of the board of directors.

Chester T. Reed, secretary of the Reed & Prince Mfg. Co., Worcester, Mass., has been elected a trustee of the Worcester Mechanics' Savings bank to succeed his father, Edgar Reed, president of the company, resigned.

T. J. Dillon Jr., president of the Standard Steel Construction Co., Ltd., Welland, Ont., has been elected president and general manager of Abendroth Bros., Port Chester, N. Y., manufacturers of soil pipe and fittings, gas ranges and heaters.

Frank A. Weidman, who for 12 years was affiliated with the American Sheet & Tin Plate Co., Pittsburgh latterly as a member of its special agent's department, became identified with the Inland Steel Co., Chicago on Jan. 15, as special representative.

Hugh Krampe has been placed in charge of offices opened at 1011 Majestic building, Milwaukee, by the Armstrong Cork & Insulation Co., Pittsburgh. Alex Callow has been made manager of offices re-opened in Denver at 1875 Gaylord street.

J. A. McClure Jr., president of the Bruum-McClure Co., Columbus, O., distributor of power farming equipment, has sold his interest in the company and has joined the Martin-Parry Corp., York, Pa., automobile body builder, as sales manager of the dump body and accessories division.

John Breen has resigned as foreman of the salvaging department of the Whitin Machine Works, Whitinsville, Mass., to assume a position as road superintendent for the Abington Textile Machine Co., Abington, Mass. He will cover the northern states and Canada.

William L. Behm, who for the past nine years has been affiliated with the Hausmann & Wimmer Co., First National Bank building, Pittsburgh, has returned to Luria Bros. & Co., Inc., Reading, Pa., being affiliated with J. E. Jacobson in its Pittsburgh office, ninth floor, Oliver building.

John P. Ilsley, former New York district sales manager of the Niles-Bement-Pond Co., 111 Broadway, and later with the Reed-Prentice Co., Worcester, has been appointed New England sales manager of the Solvay process Co., Syracuse, with headquarters at 89 State street, Boston.

Gilbert T. Mason has been made district sales manager for Alloys & Products Inc., New York, with headquarters in Buffalo. Mr. Mason until recently was assistant manager of the Titanium Bronze Co., Niagara Falls, N. Y., and previous to that time was with Clum & Atkinson, Rochester, N. Y.

Charles H. Hutchins, formerly president of the Crompton & Knowles Loom Works, Worcester, Mass., will leave New York, Feb. 11, for a Mediterranean cruise. His brother, George F. Hutchins, former general superintendent of the works, sails Feb. 14 for a two months' cruise in the Mediterranean.

Zeno D. Barnes has been appointed Cleveland manager of the Ajax Metal Co., Philadelphia, succeeding Louis E. Purnell who died recently. The Cleveland office, 429 Schofield building, will serve Ohio and Michigan. Mr. Barnes formerly was connected with the Westinghouse Electric & Mfg. Co. and the Westinghouse Air Brake Co.

J. K. Williams was elected a director of the Franz Foundry & Machine Co., Akron, O., at the annual meeting of the stockholders recently. Other officers and directors elected were C. Franz, president; C. W. Franz, vice president; John A. Brittain, secretary; W. H. Parry, treasurer; J. M. Alderfer, R. J. Coleman and C. M. Mishler, directors.

Sidney Norwood, 912-915 Kresge building, Detroit, for a number of years Michigan representative of the Interstate Iron & Steel Co., the Griffin Mfg. Co., and the Massillon Rolling Mill Co., is going into business for himself as a manufacturers' agent, handling among others the products of the Elliott-Blair Steel Co., New Castle, Pa.

James C. Potter and John Johnston, president and treasurer, respectively, of the Potter & Johnston Co., machinists, Pawtucket, R. I., are two of the three incorporators of the Potter Fine Spinners, Inc., which has been organized in that city with a capital stock of $800,000 to do a general textile business in a mill to be erected.

Thomas O. Marvin has been appointed by the President to be chairman of the United States tariff commission for the year beginning Jan. 15, and William S. Culbertson to be vice chairman for the same period. Mr. Marvin has been a member of the commission since his appointment by President Harding in March, 1921, and vice chairman since May 5. Mr. Marvin succeeds Thomas Walker Page who will remain as a member of the commission.

K. L. Porter, sales engineer, has been appointed to take charge of the factory branch office at 116 Broad street, New York, for the Economy Baler Co., Ann Arbor, Mich. He will also be in charge of the warehouse and service station at 108-126 Dobbin street, Brooklyn. The company formerly maintained offices at 68 New Chambers, New York.

W. H. Graul and J. J. Hughes have resigned from the American Steel Foundries at Chicago and have opened offices at 1313 Peoples Gas Building where they will represent the Ohio Steel Foundry Co. and the McConway & Torley Co. The former is a manufacturer of steel castings at Lima, Springfield and Bucyrus, O., and the latter is a builder of car couplers at Pittsburgh.

W. H. Patterson, who has been associated with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for the past 16 years has resigned to become vice president of the Kaestner & Hecht Co., Chicago, electric elevator builders. A. E. Hitchner, assistant to the manager, industrial department, in general charge of the mining and electro-chemical industries, will have general charge until further notice of the sections formerly handled by Mr. Patterson.

C. R. Scarborough, president of the New Home Sewing Machine Co., Orange, Mass., and Harvey S. Dawley, treasurer and an official of the company for 38 years, have retired from the management. New officers have been elected as follows: President and treasurer, DeForest Candee; first vice president and general manager, H. A. Burns; vice president and director of sales, A. H. Chadbourne; controller, F. J. L. Moore; assistant treasurer, E. C. Buell, and secretary, W. L. Ranney.

Edward H. Bindley, who is vice president and director of the Pittsburgh Steel Products Co., and who has been vice president and director of the Neely Nut & Bolt Co., Pittsburgh, has been elected president of the Neely company in succession to his father, the late John Bindley. At the recent annual meeting of the Neely Nut & Bolt Co., R. A. Lackner, secretary, treasurer, and general manager of the company, was elected vice president, treasurer and general manager, and Albion Bindley, formerly a director of the Neely company, was elected secretary.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

REORGANIZATION of the Bridgeport Brass Co., Bridgeport, Conn., to meet the requirements of an added cost accounting system, is announced by Carl F. Dietz, president of the company, formerly vice president and sales manager of the Norton Co., Worcester, Mass. General works manager, a new position, is to be filled by Walter R. Clark; Arthur Brewer, chief engineer, will be works manager of the mills cost department; E. R. Feicht will be in charge of the engineering and maintenance department; G. E. Oakly will be works manager of the fabricating department, and Warren D. Blatz will be general sales manager. The entire process engineering department has been absorbed by the research engineering department, under the supervision of William R. Webster, vice president, who was formerly general superintendent, this office being abolished. The cost accounting department is temporarily in charge of Paul Swartz.

* * *

METAL specialties and tools are to be manufactured by the Peirdieu Tool Mfg. Co. which has been incorporated at Milwaukee with $75,000 authorized capitalization. The incorporators are Rugley A. Perdieu, 464 Layton boulevard, Milwaukee, J. Mathews and Ben Poss.

* * *

AUTOMOBILE specialties will be manufactured by the Raymond Mfg. Co., Milwaukee, which has been incorporated for $30,000 by Charles S. Raymond and associates. A small shop will be erected at once on Richard street. It will be of brick, 1-story, 40 x 75 feet.

* * *

THE Warren Steam Pump Co. Warren, Mass., at its annual meeting held Jan. 19, elected these officers: President, H. K. Hallett; treasurer, William W. Shuttleworth; clerk, Howard F. Phinney; auditor, Charles E. Anderson; and directors, the first three named officers.

* * *

DIRECTORS of the International Steel Products Co., Hartford, Wis., were authorized at the annual meeting of stockholders either to sell the property or raise sufficient capital to carry on the business for another year. The company specializes in the manufacture of mufflers for automobiles. A. F. Schauer is president.

* * *

ONE of the largest contracts placed for steel window sash is that equivalent to 140 tons received by Robertson & Jackson, Inc., Majestic building Milwaukee, from H. Schmidt & Son Co., general contractor for the new $1,250,000 tuberculosis sanatorium being erected at the National Soldiers' Home in Milwaukee. The sash to be used is made by the Detroit Steel Products Co.

* * *

EARL J. BULLARD, mechanical engineer, 209-211 Washington building, Madison, Wis., has organized the Bullard Mfg. Co. under the laws of Wisconsin, to establish a factory for the manufacture of a line of mechanical specialties which he has invented and patented. The capital stock is $25,000. At the start, the company will specialize in the manufacture of piston rings and several other gas engine parts.

* * *

DIRECTORS of the Boll Bros. Mfg. Co., Harrisburg, Pa. manufacturer of reamers, cutters and special tools, have not determined whether to rebuild the company's plant which was destroyed by fire Jan. 1, with a loss of $30,000, fully insured. The weather has interfered with the company's efforts to adjust a complete inventory. The fire also destroyed the warehouse and wire department of the Capital Bedding Co. and the office of the Oliver Chilled Plow Co.'s plant.

* * *

OFFICERS of the Century Machine Co., Holyoke Mass., were elected at the annual meeting as follows: President, George H. Empsall; vice president, Anton C. Schmelzer; treasurer, Nathan P. Avery; assistant treasurer, Frederick G. Robinson; clerk, Russell L. Davenport; directors, the officers with the exception of Mr. Robinson, and Thomas E. Eaton, Edward J. Meacham, Robert L. Notman, Edward A. O'Donnell, Charles D. Heywood, Edward C. Purrington, Joseph F. Ranger and William J. Walsh.

* * *

FOLLOWING are the officers of the Reed & Prince Mfg. Co., Worcester, Mass., who were elected at the annual election held Jan. 18. President, Edgar Reed; vice president and general manager, E. Howard Reed; secretary, Chester T. Reed; treasurer, Alden Reed; and clerk, E. Windsor Reed, all of whom also are directors. William L. Ames, formerly treasurer of the company, retired as a director. The company is operating at about 40 per cent capacity and employing between 400 and 500, 55 hours a week.

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LEASE of the Immel plant in East Livingston avenue, Columbus, O., has been taken by the Ramey Mfg. Co., Columbus, O., manufacturer of vacuum cleaners, sawmill blowers and heating furnaces. The new building has five stories and basement with a total floor area of 26,000 square feet. Removal of the equipment and offices of the company from the Hubbard building, 44 South Front street, is scheduled between Feb. 15 and March 1. Additional workmen are to be employed when the new quarters are occupied. The furnace business of the company was purchased a year ago from the F. B. Zeig Mfg. Co., Fredericktown, O.

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REMOVAL of the National Razor Mfg. Co. from Fremont, O., to Lisbon, O., has been announced by H. D. Petty, general manager. The company had considered moving to Amherst, O., but decided upon Lisbon where $50,000 additional capital has been provided through the sale of preferred stock. A 3-story brick building and a 1-story forge room, giving a total floor space of 9000 square feet, has been purchased, together with some additional equipment. Officers of the company are: President, J. J. Bennett; vice president, J. H. Hinchcliffe; secretary, T. C. Williams; treasurer, W. C. Bellinger; and Mr. Petty. These men, with R. W. Firestone, W. H. Hepburn, C. W. Ourant and J. F. Adams, constitute the board of directors.

Cost of Living Down 20.3 Per Cent from Peak

The total cost of living in the United States has fallen 20.3 per cent from the peak in July, 1920, but in November, 1921 it still was 63 per cent higher than in July, 1914, according to the latest report issued by the National Industrial Conference board, New York. The report is the eleventh in the board's studies of the cost of living, and is based upon material gathered from a large number of representative retail dealers in clothing, furnishings and fuel, and from authorities representing a wide variety of interests in many sections of the country in connection with rents and carfares. The retail food price index numbers of the United States bureau of labor statistics were used as a basis for the estimated changes.

The rise in cost of the major items in the wage-earner's family budget from the beginning of the war to November, 1921 is estimated to have been as follows: Food, 52 per cent; shelter, 69 per cent; clothing, 61 per cent; fuel and light, 79 per cent; sundries, 78 per cent.

The report shows that the peak of the cost of living in the United States was reached in July, 1920. Since then, food has decreased 31 per cent; and sundries, 4 per cent; while shelter has increased 7 per cent and fuel and light, 8 per cent.

The change in the cost of living between July, 1921 and November, 1921, the report shows, was almost negligible, averaging only 0.06 per cent. During these four months the cost of shelter and fuel and light showed no change while the cost of clothing decreased 2 per cent, and that of sundries, 4 per cent. The only item in the wage-earner's budget which, since last summer, has shown a tendency to increase, is that of food, the cost of which has gone up 3 per cent since July, 1921.

More Cost Data Needed, Says Conference Board

The volume of unemployment in normal times is sufficient to warrant concerted effort on the part of economists and business men to remove certain of its causes, according to a report by the National Industrial Conference board, New York. This report, entitled "The Unemployment Problem," makes a brief but comprehensive survey of the extent of unemployment during normal periods and during the present business depression, discusses the causes and analyzes the remedies.

Management should make and is making efforts to bring close co-ordination within plants and industries, between establishments and localities, and within the nations, the report states. These efforts aim to provide greater regularity in the supply of raw materials, to standardize products, to co-ordinate the activities of sales and production departments and to reduce labor turnover. It may be extended to encourage diversity of local industries, to centralize local labor market, to dovetail employment and develop systems of transfer and promotion.

In attempting to remedy the causes of unemployment due to influences operating outside the plant, the report points out, there is need for a more adequate system of collecting and disseminating information showing the trend of prices, the actual cost of operation, and revenues from industry.

Enjoins Steel Workers in Picketing of Mills

A permanent injunction has been issued at Covington, Ky., by United States District Judge A. M. J. Cochran, restraining officers and members of Brighton Lodge No. 17, Amalgamated Association of Iron, Steel and Tin Workers, of Newport, from interfering with deliveries to or from the Newport Rolling Mill and the Andrews Steel Co. The court held that attempts of the character reported constituted interference with interstate commerce. The order does not interefere with the presence of troops at the mills.

Continue To Manufacture Hydraulic Machinery

R. D. Wood & Co., Philadelphia, which for many years has been manufacturing hydraulic machinery and gas producers, will continue active in this business, notwithstanding the recent sale of the equipment of the Camden Iron Works, of which the former were owners. The sale made by the receivers of the Camden Iron Works does not affect the plans of R. S. Wood & Co. for continuing in the manufacture of hydraulic machinery, gas producers etc. in which it has been prominent for more than 30 years, that company states. The plant of the Camden Iron Works has been closed down permanently and the equipment disposed of in various quarters. The real estate and buildings are yet to be sold. R. D. Wood & Co. will continue manufacturing at the Florence, N J. works where new shops have been built and equipped.

Employment in New York Continues To Gain

New York, Jan. 24.—Employment in the metals and machinery manufacturing industries of New York state continued upward from November to December, according to a statement issued by the state industrial commissioner, Henry D. Sayer. He says further:

"Increased employment again occurred in the iron and steel industry and in the railway equipment industry as the result of improved business conditions. The machinery industries and the instruments and appliances industries also showed a gain during the month. In the machinery industries increased employment was reported, mainly in the manufacture of printing machinery, electrical goods and agricultural machinery. Manufacturers of dental supplies, meters, clocks, cameras and lenses reported greater employment in December, and a gain occurred in the manufacture of tools and cutlery. The only decreases of importance were in the shipbuilding, automobile, heating apparatus, and brass and copper industries."

Employers Elect Officers

Herman A. Wagner, president of the Wisconsin Bridge & Iron Co., Milwaukee, was elected president of the Milwaukee Employers' council at the annual meeting Jan. 16. Richard P. Tell, president and general manager of the National Brake & Electric Co., who served as president during the first year of organization, was elected vice-president. H. H. Seaman, head of the Seaman Body Corp., was chosen treasurer. The secretary and manager is Joseph McC. Bell, with headquarters at 288 East Water street, Milwaukee. The Employers' council now has in its membership 31 distinct industrial groups, representing virtually every major industry in Milwaukee.

Municipal Shops Failure

After an experiment lasting several years municipal machine shops of the city of Chicago have been declared a failure. The city invested more than $2,700,000, but found that work done in the municipal shops cost three times what it would had it been done for by outside shops. The shops have been turned over to the fire department to be used for repairing fire apparatus.

The Crane Co., Chicago and Bridgeport, Conn., has put into effect a wage reduction of 12½ per cent for all shop forces at both cities. Its plants are operating at about 50 per cent of capacity. This is the first reduction by the Crane company from its peak wartime wage.

Equipment Inquiries Numerous

Orders Are Few and Confined to Single Tools but Influx of Inquiries Shows Users' Requirements Are Large—Secondhand Machinery Is in Demand —Railroad Buying Is on a Small Scale

DEVELOPMENTS of outstanding importance are lacking in the machine tool and equipment market. Orders of the week have been confined to single tools and these have not been as numerous as they have in the past few weeks. However, while actual sales are few and infrequent, interest in machine tool equipment by users is shown by the number of new inquiries which have been received by dealers. The railroad situation continues to absorb considerable interest, but little buying is reported by the carriers and even the inquiries which have been placed current have not been acted upon. However, reports are current to the effect most of the roads are preparing to issue inquiries, and are making provision for their tool needs in their annual budgets.

Some interest is reported on the part of the Rutland railroad, which is said to be showing some activity in connection with a list of 12 machines for which it inquired some time ago. During the week the Erie railroad closed on a quantity of machinery. In the East a revival of interest in machine tools on the part of building supply manufacturers is reported.

Secondhand machinery continues to practically monopolize the market. In addition to the used tools in dealers hands, hundreds of additional machines are being auctioned off by companies which have no further use for them, and as a consequence new tools are unable to compete in prices. In Chicago tools of the Isco Co. are being auctioned off while in Cleveland, 200 tools are to be auctioned at the plant of the Standard Parts Co., the sale to start Jan. 25. In practically every other section of the country similar sales are in progress or being planned. While used machinery is obtainable at practically buyers' own prices, generally quotations on new tools are holding at the established levels. An exception to this, however, is the action taken during the week by a Midwestern manufacturer of radial drills in announcing a reduction of 12 per cent.

Crane equipment is in even less demand than machine tools. However, a few orders were placed during the week, including one for a 25-ton, 4-motor crane placed by the American Gas & Electric Co., and another for two cranes ordered by the Standard Underground Cable Co., St. Louis. The Ellwood City Forge Co., Ellwood, Pa., the National Tube Co. and the Elliot Co., Elliot, Pa., which have been reported in the market for cranes for some time past, as yet have not closed on their requirements but awards are expected in the next few days.

Revival of Interest in Machine Tools Is Seen

NEW YORK, Jan. 24.—Although on the whole the local machine tool market is dull, there appears to be more interest on the part of manufacturers producing building supplies. These interests include manufacturers of heating equipment, plumbers' supplies, ventilator systems and miscellaneous metal fixtures. No inquiries of special size are noted but such as they are, they are quite numerous and it is evident users' interest in machinery and equipment is being slowly revived.

The railroad situation continues to absorb considerable interest, although in the past week, there has been little or no actual buying and relatively no inquiry. It is the few lists pending and the reports of further lists contemplated, that are responsible for the interest. The Rutland railroad, which issued an inquiry for about 12 machine tools two months ago, is said to be again showing some interest in covering on this inquiry. The Erie railroad purchased several machine tools about 10 days ago.

Included in miscellaneous inquiry is some foundry equipment for an addition to the Burlington, N. J. plant of the United States Cast Iron Pipe & Foundry Co. A recent orders calls for a ½-ton electric furnace for the Companu Nacional de Electricidad, Barcelona, Spain, the award going to the Pittsburgh Electric Furnace Corp., Pittsburgh. A northern New Jersey company has closed upon some fabricating equipment. A reduction of 12 per cent by a midwestern manufacturer of radial drills is the only price change reported recently.

Outstanding in the eastern crane market is an order for a 25-ton, 4-motor crane, with 37-foot span, for the American Gas & Electric Co., 30 Church street, New York, the business going to the Whiting Corp., Harvey, Ill. A 1-ton post type jib crane has been placed by a New York state manufacturer, with H. D. Conkey & Co., 149 Broadway.

New inquiry still is light. In one or two instances, sellers report some improvement, while in others, it is claimed demand is smaller, than at any time this month. One inquiry calls for an electric overhead crane for installation in a hydro-electric plant.

While definite information is not available it is reported the Du Pont Engineering Co., Wilmington Del., will in all probability be awarded the contract for the erection of the proposed power plant for the city of Lansing, Mich., and that the overhead crane required will be purchased by the city itself through the offices of a New York engineer.

Tool Orders Are Few and Small

CLEVELAND, Jan. 24.—No improvement in the demand for machine tools and shop equipment is reported by dealers in this district. However, while orders are few and infrequent, inquiries continue to be received in

large numbers, one dealer stating that as many as 15 have been received in one day. Despite these, inquirers are slow to close on their needs and in many cases dealers feel that the inquiries are little more than price feelers.

The little buying which is being done is confined practically to secondhand machines. Some new tools have been moved but activity in this class is negligible when compared with the movement of used equipment. Prices for this latter equipment are extremely low and it is possible for buyers to practically name their own prices. On the other hand quotations on new tools are holding at the established levels and at present there is no indication of a reduction. Machine tool shops are scarcely working and in one instance, a large tool builder in this city is not building new equipment, but is filling orders with used equipment which it has been able to obtain in the market. This company purchases its own line of tools from dealers, rebuilds them, and sells them at low prices.

Railroad buying is small. Even inquiries from these interests have dropped off and dealers here now are of the belief that there will not be any buying on the part of the roads for months to come. The few lists which have been current here for some time, still are pending, and it is apparent that most of them are being held up, at least temporarily.

Single tool inquiries are the rule. So far as can be learned there are no outstanding lists being worked on, other than the few which have been mentioned in these columns before. The list of the Warner Gear Co., Muncie, Ind., is still being actively quoted on and it is thought some action on this list may develop soon. Another sizable list being worked on by dealers here is from the Streets Co., Chicago. This latter inquiry, which calls for quotations on approximately 43 separate items, it is thought, will not be purchased against for some time.

Demand for cranes in this district has shown no improvement over that of the last few months. Little activity is expected in this class of equipment until the erection of industrial buildings on a much larger scale is undertaken. Pending this, however, crane manufacturers are filling orders for repair parts, etc. In this connection machine tool builders in various parts of the country are manufacturing commodities for the general trade on a contract basis, pending a revival of demand for machine tools. As an example of this, a Cleveland toolbuilder is manufacturing washing machines.

Buying Movement Is Not Large

BOSTON, Jan. 24.—Scattered buyers continue to come into the Boston market for single machine tools, but lists of more than four or five are absent and there is little indication of any pronounced buying movement in sight. Tool manufacturers throughout New England are confident of a pick up in demand, even though orders to date in some cases have been disappointing. One manufacturer of lathes reports a falling off during the past week in orders and inquiry in nearly all its offices which are scattered throughout the country. To offset this, at least two machine tool manufacturers and several small tool builders report better inquiry. Recent sales include two lathes to a Massachusetts washing machine manufacturer; a planer to a Rhode Island textile plant; a lathe and shaper to a Connecticut hardware manufacturer; a milling machine and two grinders to a Boston garage, and four snagging grinders to a Massachusetts foundry. One western Connecticut machine tool dealer reports having sold eight new machines and three secondhand machines during the week. This, together with reports from other dealers substantiates the general feeling that secondhand equipment is being disposed of more rapidly than new. One buyer, in search of second hand lathes of a particular make, inquired of every source in New England without being able to obtain any. Railroads in New England all have machine tools included in their 1922 budgets, but purchasing agents so far seem to be holding off either for lack of available funds or for lower prices. General equipment is moving more rapidly than the straight machine tools. A plant in Maine recently bought a steam engine and a miscellaneous lot of pulleys and transmission machinery. The city of Boston is taking bids covering machinery and equipment for its ferry service, and the Boston and Albany railroad is asking for quotations on miscellaneous engine parts and one 30-horsepower gas engine. Prices are unchanged but the feeling is spreading among buyers that further declines may be looked for.

Inquiry and Sales Are Improved

MILWAUKEE, Jan. 24.—Inquiry for machinery is more active, and sales are increasing. As yet the volume of business is not large but the character of inquiry is such that manufacturers and dealers are confident the first month of 1922 will close with a much better record than December, which probably was the most active month of 1921. The clothing and general textile industries are making some purchases, and the automobile trade is inquiring more in a representative way, after a lapse of two or three months. Metalworking industries generally find new business better and in increasing volume. The lumber industry in northern Wisconsin, particularly hardwood manufacturers, find business so much improved that production, which has been hovering around a mark of 33 1/3 per cent of capacity, is going to 50 per cent and beyond, which fact already is developing some orders for sawmill machinery, largely for replacement. The lumber industry was very quiet as a buyer of machinery for a year until improvement set in at the close of November.

Demand Is Not Active

PITTSBURGH, Jan. 24.—There has been more activity during the past few days in the machine tool market than has been the case recently. During the week a company in Erie, Pa., closed on two 34-inch boring mills. An Indiana user purchased a used straight-sided press weighing more than 50,000 pounds from the Reliance Machinery Sales Co., while a nearby steel company closed on a 20-inch lathe and a 4-foot radial drill. Another machinery dealer reports the disposal of two drill presses, a motor-driven hack saw and small shears or forming rolls for special tin work on stoves. A Pittsburgh buyer took a grinder and several dealers are working on an inquiry from Brackenridge, Pa., for a keyseater. The Charleroi Iron Works, Charleroi, Pa., recently entered the market for a keyseater.

Many inquiries are current from schools, including Braddock, East Pittsburgh and Oil City high schools, while transient prospective purchasers, are actively engaged obtaining prices, preparatory to starting up garages, machine shops, etc. The Stonecrete Corp., Penn avenue, Pittsburgh, still is negotiating for second hand equipment for a machine shop at Cheswick, Pa.

The Standard Underground Cable Co., which as reported in THE IRON TRADE REVIEW of Dec. 29, closed on two cranes with the Euclid Crane & Hoist Co., Euclid, O., for its St. Louis, plant, has ordered two more, one each 10 and 5-tons for Pittsburgh from the same builder. This furnishes the only award this week. The United Engineering &

Foundry Co., the Ellwood City Forge Co., the National Tube Co., and the Elliott Co., are four prospective buyers which appear most active at the moment. Numerous hoist inquiries are before the trade, many being from this immediate locality and various points in Ohio. As noted last week the Wheeling Steel Corp., has closed on a blooming mill and manipulator with Mackintosh, Hemphill & Co.

Machinery Purchases Still Are Small

TORONTO, Jan. 24.—Sales of machine tools and equipment during the week were few and confined generally to single units. However, the general opinion among dealers is that business is about to pick up. Inquiries are numerous. Manufacturing plants in general appear to be making progress and statements issued by some are exceptionally optimistic.

Small tool demand has shown considerable improvement during the past week and dealers report a fairly strong movement especially in drills, although other lines are also showing more activity. The London Concrete Machinery Co., London, Ont., has been awarded a contract to supply a 12-inch deep well turbine pump with motor to Kitchener, Ont The company also has received a similar order from the Utilities commission of London, Ont. The Beaver Machine Shop, 1110 Centre street, Calgary, Alta., is in the market for a lathe and gear cutter.

The Industrial Supply & Service Co., Ltd., Vancouver, Ont., wants a double end punch and shear, and a nut making machine. T. J. Moore, Wiarton, Ont., is asking for a double-end matcher for hardwood flooring. The Union Natural Co. Chatham, Ont., wants piping, tools, and drilling equipment. J. Grey, Maple street, Collingwood, Ont., is asking for machinery and equipment for a proposed steel spring and steel specialty factory. The Hamilton Tar & Ammonia Co., Hamilton, Ont., is asking for tar stills, tanks and general equipment for a tar and ammonia plant. W. Ward & Son, 19 King street, London, Ont., are asking for machinery for making cigars. C. Lovatt, 1537 St. Denis street, Montreal, Que., is in the market for a 25-horsepower boiler, and the Mount Royal Arena, Montreal, Que., is in the market for equipment for an artificial ice plant.

Secondhand Tools Affect Market

CHICAGO, Jan. 24.—Large supplies of secondhand machinery, both used and unused, continue to affect the market for machine tools. So much of this equipment is available that dealers constantly find themselves faced by competition at prices they cannot hope to meet on new machines. Another factor tending to lessen sales through regular channels is a number of auctions. One of those now unsettling the Chicago situation is being held at the plant of the Isko Co. in Chicago, where a wide variety of equipment is being sold. Much of this is being taken by what are known as scalpers, not regular dealers, and this machinery doubtless will appear later in competition with regular offerings. Prices appear to be important in deciding whether a sale may be completed or deferred. In many cases buyers seeking equipment ask long terms and in others seek to trade machines for which they have no present use.

Railroad purchasing agents are proceeding slowly as they find they are not able to command funds to cover machines they desire to buy. Under present conditions, with railroad shops operating at a rate far from capacity, the immediate pressure for additional equipment is not strong. In spite of the general dullness, some dealers find January presenting a better total sales than preceding months, the business consisting of scattered single machine sales.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

HARTFORD, Conn.—The New England Blower Co. has been incorporated with $15,000 capital, to make blowers and blower pipes by Christian B. White, Ivor Miller and John R. Magnuson.

WATERBURY, CONN.—The Mohawk Mfg. Co., sheet brass goods, plans a 50 x 50-foot addition to a plant recently acquired.

BOYNTON, FLA.—The Tabit Pump Attachment Co. has been incorporated with $20,000 capital stock by W. S. Shepard, P. D. Lynch and others.

CHICAGO—C. Schultz, 7251 Vernon avenue, has let a contract for a 1-story machine shop, 50 x 147 feet, to cost about $14,500.

CHICAGO—The Caspers Tin Plate Co., 2259 Oakdale avenue, has been incorporated by W. J. and A. E. Thiffault and R. I. Caspers.

CHICAGO—The Machinery Market, Inc., 617 Fulton street, has been incorporated with 48 shares of no par value, by William D. Alton, Walter A. Miller, O. B. Cahoon and S. J. Stevenson.

CHICAGO—The P. C. West Mfg. Co., 105 West Monroe street, has been incorporated with $50,000 capital stock to manufacture and deal in machinery, etc., by E. H. Lochner, Urban A. Lavery and A. T. Carton.

OREGON, ILL.—The Paragon Foundries is building a large addition.

BLOOMINGTON, IND.—A 1-story power house will be erected at the plant of the Showers Bros. Co.

INDIANAPOLIS—The Peerless Metal Products Co., Chicago, plans to establish a plant here.

INDIANAPOLIS—The J. H. Kreippe Tin & Sheet Iron Works, 512 West Franklin street, is having plans drawn for a 1-story building, 35 x 80 feet.

INDIANAPOLIS—The Interstate Car Co., Massachusetts avenue and Sherman drive, is reported planning to erect a foundry at an estimated cost of $25,000.

JONESBORO, Ind.—The Indiana Rubber Co. has had plans drawn for a factory building addition, 3-stories, 60 x 125 feet.

RICHMOND, IND.—The Reliance Foundry Co. is having plans drawn for a foundry, one story, 85 x 110 feet, to cost $30,000.

RICHMOND, IND.—The Peille Co., maker of metal doors, etc., has awarded a contract for a 2-story plant building, 250 x 500 feet, to cost $150,000.

SOUTH BEND, IND.—The foundry of the Studebaker Corp. here recently was damaged by fire.

TERRE HAUTE, Ind.—The American Car & Foundry Co. has awarded a contract for a boiler house, 1-story, 50 x 70 feet, to cost $25,000.

BALTIMORE—The Market Mfg. Co., 1021

Cathedral street, plans a machine shop and repair works, 50 x 85 feet, to cost $22,000.

JESSUPS, MD.—A 2-story, 45 x 150-foot machine shop will be erected at the Maryland house of correction, Bridewell, Md.

BOSTON—Chain Electric Co. has been incorporated with $50,000 capital by Herman Loewenberg and others of Boston.

BOSTON—Causer Brass Finishing Co. has been incorporated with $10,000 capital. Joseph E. Sager, 43 Richards street, Dedham, Mass., is one of the incorporators.

BOSTON—Liberty Spark Plug Corp. has been organized recently with a capital of $75,000. Richard J. Burton, of Brookline, Mass., is one of the incorporators.

FALL RIVER, MASS.—The Fall River Gas Works Co. has let the contract for a 1-story, 26 x 42-foot boiler house.

NORFOLK DOWNS, Mass.—The Pneumatic Scale Corp., Ltd., has increased its capital from $1,500,000 to $2,800,000.

SPRINGFIELD, MASS.—Coldak Co. has been incorporated with $100,000 capital to manufacture refrigerating machinery. Henry F. Blanchard of 126 Forest Park avenue, Springfield, is one of the incorporators.

ESCANABA, MICH.—O. P. Chatfield is negotiating for the purchase of the electric light plant at Iron Mountain, Mich., which he proposes to remodel into a brass foundry.

DOVER, N. J.—The New Jersey Power & Light Co. will acquire the Woodbourne Electric Light, Heat & Power Co. and will make extensions and improvements to the power plant and system.

EGG HARBOR, N. J.—The Ingram Motor Co., 2 Rector street, New York, plans a 2-story, 40 x 200-foot automobile plant here. A power plant will be built in connection.

JERSEY CITY, N. J.—A 1-story building will be erected here by L. O. Koven & Bro. for the manufacture of galvanized range boilers and other metal products.

JERSEY CITY, N. J.—The Erie railroad, 50 Church street, New York, has awarded a contract for a 1-story machine shop, engine house and boiler plant on Pavonia avenue. It will cost $75,000.

NEWARK, N. J.—The Greyhound Motors Corp. has been incorporated with $3,000,000 capital by Ralph L. Lanterman, Fred F. Boniface and Burton H. Champlain.

NEWARK, N. J.—The Cartoning Machinery Corp. has been incorporated with $150,000 capital stock by George B. Bailey, Joseph Carracino and Ralph W. Chandless.

NEWARK, N. J.—Phineas Jones & Co., 305 Market street, maker of auto bodies, etc., have awarded a contract for a 1-story factory building, 50 x 300 feet, to cost about $300,000.

PHILLIPSBURG, N. J.—The Warren Foundry & Machine Co., 183 Sitgreaves street, has plans for a 2-story building, 60 x 100 feet.

BUFFALO.—The McDermott Steel Co., 123 Ryan street, has plans for a building, 200 x 250 feet, to cost about $250,000.

BUFFALO.—The National Biscuit Co., 217 Ellicott street, plans a power plant in connection with its new factory.

BUFFALO.—Edwin Miller, 1199 Main street, has purchased a building which he will remodel for the manufacture of mining machinery.

BUFFALO—The American Radiator Co., 1807 Elmwood avenue, plans a compressor house addition, 50 x 80 feet, to cost about $8000.

BUFFALO.—The Twin-Plex Reversible Window Co., Toledo, O., maker of windows, is reported considering a plant in this city. The company is controlled by Buffalo interests including, Robert E. Williams, 37 Church street, and others.

HAMMONDSPORT, N. Y.—The Aerial Engineering Corp. has been incorporated to manufacture aircraft, automobiles, etc., by A. L. Thurston, Joseph S. Bennett and William C. Chadeayne.

JAMESTOWN, N. Y.—The J. N. K. Machine Corp. is erecting a factory building. Edward H. Johnson is president.

NEW YORK—Bids will be taken shortly by the New York Edison Co. tor a 2-story power plant.

NEW YORK.—Frederick Osann Co., 245 Seventh avenue, maker of sewing machines and parts, has acquired additional quarters and plans expansion.

NEW YORK—A garage, two stories, 100 x 100 feet, will be erected by the W. M. Realty Corp., 116 West Thirty-ninth street, at an estimated cost of $65,000.

NEW YORK.—The Mutal Lamp Mfg. Co., Houston and Crosby streets, maker of electric lamps, has purchased a 7-story building, 65 x 120 feet, which it plans to utilize.

NEW YORK.—The Gulf Refining Co., 21 State street, has had plans prepared for a 1-story machine shop, 100 x 232 feet to cost about $70,000.

NEW YORK—The Freed Eisemann Radio Corp. has been incorporated to make wireless apparatus, etc., with $25,000 capital stock, by A. W. Jack and C. Nulle. The company is represented by F. G. Weisser, 2 Rector street.

NEW YORK.—The Superior Stencil Writing Machine Co has been incorporated with $50,000 capital, by E. E. Gompers, P. Hein and L. Weyl. The company is represented by J. Follette, 233 Broadway.

NEW YORK—The Shenandoah Steel & Iron Corp. has been incorporated with $30,000 capital by H. M. Weiss and C. Prensky. The company is represented by L. Scadron, 249 Broadway.

ROCHESTER, N. Y.—The Rochester Lock Corp. has been incorporated by J. P. Day, C. A. Harold and G. W. Ryan. The company is represented by Renton, McKay, Brown & Johnson.

COLUMBUS, O.—The No Liquid Door Check Co. has been incorporated with $200,000 capital stock by John T. Corbert, George T. Drake, E. B. Gerlach, S. F. McConkey, E. D. Taylor and M. H. Free.

SIDNEY, O.—The Gartland Haswell Foundry Co. has been incorporated with $10,000 capital stock by John C. Haswell, H. D. Hunter, H. C. Sullivan, C. E. Swank and O. V. Coon.

ERNEST, PA.—The plant of the Cochrane Corp., boiler maker, recently was damaged by fire.

HARRISBURG, Pa.—Part of the plant of the Boll Bros. Mfg. Co., Fourteenth and Howard streets, maker of brass and other metal beds, recently was damaged by fire.

NORRISTOWN, PA.—The Hutchinson Mfg. Co., maker of woodworking machinery, plans a factory building, 60 x 160 feet.

PHILADELPHIA—Bids were closed Jan. 23 for a shop and office building for the Philadelphia Steam Heating & Engineering Co.

PHILADELPHIA—Work will begin soon on a 2-story machine shop for the Fanning-Schutte Engineering Co.

PHILADELPHIA—J. M. White, manufacturer of wire and wire products, has purchased adjoining property, 60 x 64 feet, on which he plans a plant addition.

PHILADELPHIA.—J. M. White, 1116 Olive street, operating a wire manufacturing and wire-braiding plant, has acquired adjoining property, 60 x 64 feet, and will utilize it as a site for a plant addition.

PITTSBURGH—The Bronx Equipment Co. New York, plans a plant here, two stories, at an estimated cost of $185,000.

PITTSBURGH—The Aeronautical Instrument Co. has been incorporated with $10,000 capital by James S. Crawford, 125 Mifflin avenue, Wilkinsburg, Pa., and others.

POTTSVILLE, PA.—The Phillips-Jones Corp. has completed plans for a 1-story power house, 50 x 50 feet.

POTTSTOWN, Pa.—The Vuloweld Rubber Co. plans a factory building, boiler house and garage, 2-stories, 40 x 65 feet, and 60 x 260 feet.

WILLIAMSPORT, PA.—The E. Keeler Co., manufacturer of steam boilers, etc., is reported considering the erection of a 2-story plant addition.

YORK, PA.—The Thatcher Mfg. Co., feed mixing machines, has been incorporated with $25,000 capital, by Allen C. Fried, Martin F. Thatcher and Walter A. McDowell.

PROVIDENCE, R. I.—The Colwell Worsted Mills has postponed until spring the erection of a 2-story, 55 x 120-foot mill, 40 x 90-foot dyehouse and a 40 x 60-foot boiler house.

PROVIDENCE, R. I.—The Atlas Pin Co. has been incorporated with $10,000 capital to make textile pins by Vincent Altobelli, John Phillips and B. J. McLyman.

PROVIDENCE, R. I.—Corp Bros., Inc., have been incorporated with 250 shares of no par value to operate a machine shop, by Frederick W. Corp., Alfred E. Corp and Oscar F. Stetson.

PROVIDENCE, R. I.—The C. H. Chapman Co., Inc., has been incorporated with 250 shares no par value stock to build machinery by Carol H. Chapman, Elias H. Chapman and Libbie E. Chapman.

PROVIDENCE, R. I.—The M. & M. Mfg. Chemical Co. has been incorporated to build machinery, etc., with 250 shares of nonpar stock, by Howard J. McLane, Israel S. Marcus and James H. Lenardson.

PROVIDENCE, R. I.—R. I. Welding Co., Inc., has recently been organized with a capital of $100,000. William G. Winsor Jr., 135 Lafayette street, Pawtucket, is one of the incorporators.

PROVIDENCE, R. I.—A permit has been issued to the Textile Finishing Machinery Co. to erect a 1-story machine shop and foundry, and a 2-story office building, to cost $200,000.

GREENVILLE, S. C.—The Economy Tractor Co. has been incorporated with $100,000

capital, by W. C. Cleveland, J. P. Hughes, and others.

CHATTANOOGA, TENN.—The Crane Enamelware Co. is being organized by Frank H. Caldwell, J. J. Mahoney and Hugh W. Powell, and will establish a plant for the manufacture of enamelware, etc.

DUCKTOWN, Tenn.—The Ocoll Copper Co., 1135 Volunteer Life building, Chattanooga, Tenn., plans a flotation plant at an estimated cost of $200,000.

KNOXVILLE, TENN.—The Nance Mfg. Co., Deaderlick building, plans to establish a plant for the manufacture of various stamped electric plates, license plates, etc.

NASHVILLE, TENN.—The Ward Piston Ring Co. has been incorporated with $10,000 capital stock, by W. A. Ward, N. R. Martin and R. E. Regan.

MONTPELIER, VT.—The state has let a contract for a steel highway bridge, 21 x 86 feet,, in Highstone, to cost $75 000.

RADFORD, VA.—Fred Foster contemplates the erection of a machine shop here.

RICHMOND, VA.—The Richmond Car Works which has taken over the boiler plant constructed by the government, plans to reconstruct the plant. The company is capitalized at $500,000 and was incorporated by P. H. Joyce, J. E. Fitzgerald and D. R. Sherman, of Chicago.

WOODSTOCK, VA.—The Valley Power & Light Co. plans to rebuild the portion of its power plant recently damaged by fire.

HUNTINGTON, W. VA.—The American Car & Foundry Co. plans a number of improvements to its plant.

HUNTINGTON, W. Va.—The Proctor Safety Hoist Co. has been incorporated by Walter Proctor, 218 Fourth street, Ham Adams and others to manufacture safety hoists.

IAGER, W. VA.—The United Light & Power Co. has been incorporated with $25,000 capital stock, by F. B. Lamb, H. P. Musser and C. H. Elston, all of Charleston, W. Va.

WHEELING, W. VA.—The Wheeling Mold & Foundry Co. has let a contract for a shop building, one story, 60 x 287 feet.

APPLETON, WIS.—A charter has been granted to the Mid-West Bottle Cap Co. of Appleton, incorporated with $15,000 capital stock by John C. Hammer, Ray W. Blodgett and Caroline A. Hammer to manufacture metal caps and other specialties.

BELOIT, WIS.—The Phono-Lamp Mfg. Co. has been incorporated with $300,000 capital by M. W. Weigand, C. A. Riemer and E. R. Lucas, to manufacture combination talking machines and lighting fixtures.

GREEN BAY, WIS.—The Nelson Machinery Exchange, Inc., is the name of a corporation organized with $100,000 capital by H. J. Nelson to take over his extensive business as a dealer in new and used machine tools, factory and shop equipment. The warehouse and repair room is now being enlarged 75 to 100 per cent by the construction of a large addition. The business in its present form was established about four years ago.

MADISON, WIS.—Articles of incorporation have been filed by the Clean Easy Milker Co., capital stock $25,000, which will open a plant and manufacture milking machines and other farm appliances. B. H. Anderson, C. Hansen and L. H. Sloan are the incorporators.

MILWAUKEE—The Sundby Battery Co. has been incorporated with $500,000 capital to manufcature storage batteries, etc., by Emil J. Gerhs and Walter Schins Jr., attorneys, 105 Wells street.

MILWAUKEE—S. Schneider has engaged Architects George Zagel & Bros., 144 Oneida street, to prepare plans for a public garage and machine shop, 55 x 120 feet, part two story. It will cost about $25,000.

MILWAUKEE—A permit has been granted to the Filer & Stowell Co., manufacturer of Corliss engines, sawmill machinery, etc., to build a cupola house, 40 x 50 feet, at Becher street and Robinson avenue.

MILWAUKEE—The Milwaukee Radiator Mfg. Co. has been incorporated with $50,000 capital to manufacture automobile, tractor and truck radiators. R. I. Kenney, attorney, 120 Wisconsin street, represents the incorporators, whose identity is withheld for the present.

MILWAUKEE—The Perdieu Tool Mfg. Co. has been incorporated with $75,000 capital stock to manufacture tools and metal specialties. The incorporators are Rugley A. Perdieu, 464 Layton boulevard, J. Mathews and Ben Poss.

MILWAUKEE—Charles S. Raymond has incorporated the Raymond Mfg. Co. with $30,000 capital stock to manufacture machinery, automobile parts and mechanical specialties. William H. Schmahl, 76 Cawker building, is attorney.

MILWAUKEE—The Harsh & Chapline Shoe Co. will build a 7-story factory addition, 78 x 160 feet, and a 2-story tannery addition, 40 x 110 feet, to cost about $250,000, including new machinery, power plant and factory equipment.

MILWAUKEE—Nicholas A. Boehm, president and treasurer of the Wisconsin Brass Foundry Co., 1664 Fratney street, has incorporated a new concern, known as the Starcast Aluminum Co., with $10,000 capital stock. Herman Beckman, superintendent of the Wisconsin company, also is an incorporator.

MILWAUKEE—Architects M. Tullgren & Sons, 425 East Water street, let the general contract to W. W. Oeflein, Inc., 86 Michigan street, for a garage for the Alliance Investment Co., 115 Wisconsin street, at Broadway and Johnson streets. It will be 60 x 120 feet, part two stories and basement and cost about $45,000.

OSHKOSH, WIS.—The plant of the Oshkosh Auto Jack Mfg. Co. at 176 Marion street was damaged by fire.

SHEBOYGAN, Wis.—The H. C. Prange Co., department store, has accepted plans for a four-story building, 58 x 39 feet, to contain a central heat and power plant, requiring new boilers, a 120-foot stack, etc.

SPARTA, WIS.—F. J. Sheldon will build a 2-story garage, 50 x 88 feet, for lease to the Atkinson Nash Co. It will cost about $35,000 equipped.

WAUSAU, WIS.—The Anko Mfg. Co. has been incorporated with $50,000 capital stock by T. J. Kohl, J. Anderson and P. A. Kohl to manufacture stacks and chimneys.

West of the Mississippi

LODI, CAL.—The Industrial Mfg. Co., recently organized with $200,000 capital, plans to establish a plant for the manufacture of pumping machinery, etc. The company was organized by D. H. Thompson, William C. Allen and others.

LOS ANGELES—The Westinghouse Electric & Mfg. Co. plans a building here, six stories, 170 x 239 feet.

LOS ANGELES—The Washington Iron Works, 1946 Sacramento street, has awarded a contract for a 1-story building, 135 x 160 feet, to cost $26,000.

TOPEKA, Kans.—The D. E. Rose Trunk Co. whose plant was damaged by fire, is reported considering rebuilding.

KANSAS CITY, Mo.—The American Foundry & Mfg. Co., care of H. H. Akers, Kansas City Life building, is having plans drawn for stove works, the first unit to be 1-story, 90 x 140 feet, to cost about $30,000.

PORTLAND, OREG.—The Portland Gas & Coke Co. has increased its capital from $6,500,000 to $7,500,000.

PORTLAND, OREG.—The Alaska-Cleveland Mining Co. has been incorporated with $36,000 capital by J. F. Shelton, 700 Chamber of Commerce building, and others, to engage in developing, mining and milling operations.

PORTLAND, OREG.—The Portable Cutting Machine Mfg. Co. has been incorporated with $25,000 capital by J. D. Bobbroff, S. J. Graham and S. F. Memiro, to manufacture and sell machinery.

SEATTLE—The Northwestern Electric Co. is planning to rebuild its power house at Camas, Wash., recently damaged by fire.

SEATTLE—The Seattle Brass Works has been incorporated with $100,000 capital by W. J. Edris, L. B. Stedman and others.

SEATTLE—Tyrrell Patents Co. has been incorporated with $250,000 capital by William Tyrrell, James L. Avis Jr., and others.

SEATTLE—The Constant Pressure Diesel Engine Works has been incorporated with $120,000 capital by E. Miltenberger, F. Sutton and others.

SEATTLE—The General Petroleum Corp. is expending $100,000 on plant improvements here, which includes two new 55,000-barrel steel tanks, two 10,000-barrel steel tanks and one 500-barrel tank.

Business in Canada

NEW WESTMINSTER, B. C.—William Hendry and Thomas Ryan, Tacoma, Wash., plans a factory here to cost about $10,000, to be devoted to the manufacture of automoible accessories, etc.

FREDERICKTON, N. B.—The foundry owned by McLean, Holt & Co. recently was damaged by fire. The loss was estimated at $20,000.

BROCKVILLE, ONT.—The Lion Grinding Wheels, Ltd., has been incorporated to manufacture grinding wheels, abrasives and grinding machinery, with $140,000 capital stock by John R. Baxter, Thomas R. Eland and William J. Hall.

HAMILTON, O.—The Hydroelectric power commission, 43 Hughson street, plans an electric power plant at a cost of $100,000. Guy Long is chairman.

MITCHELL, ONT.—The Wettlemfer Co., maker of concrete machinery, plans a 1-story plant addition, 75 x 80 feet.

TORONTO, ONT.—The Nesbitt Electric Mfg. Co., Ltd., has been incorporated to manufacture electrical appliances, etc., with $60,000 capital stock by Merrill Macdonald, G. W. Adams and Percy W. Smily.

TORONTO, ONT.—The Canadian Municipal Equipment Corp., Ltd., has been incorporated to manufacture machinery, etc., with $250,000 capital stock by John Callahan, Frank Regan and Joseph Garvey.

TORONTO, ONT.—The Monmouth Steamship Co., Ltd., has been incorporated to build

and operate steamships, boats, machinery, etc., with $100,000 capital stock, by George M. Huycke, Norman E. Strickland, Joseph J. Huggard and others.

WINDSOR, ONT.—Dodd & Strothers, makers of copper wire with a plant at Sherebrooke, Ont., are reported to have obtained a site here on which they are to erect a plant.

MONTREAL, QUE.—The Bailey Motor Co., Ltd., has been incorporated with $50,000 capital stock, by Howard A. Hall, Cuthbert P. Coatesworth and Norma Lown.

MONTREAL, QUE.—Day-Martin, Ltd., has been incorporated to manufacture automobiles, etc., with $150,000 capital stock by Aubrey H. Elder, Felix W. Hackett and Winchester H. Biggar.

MONTREAL, QUE.—Millers Machinery, Ltd., has been incorporated to manufacture machinery, tools, etc., with $150,000 capital stock by Louis P. Crepeau, Maurice Dugas, S. H. R. Bush and others.

MONTREAL, QUE.—The Red Star Oil Refineries, Ltd., which has a capitalization of $3,000,000, has obtained a site of 18 acres on which it is reported planning to erect an oil refinery.

MONTREAL, QUE.—The Dominion Wood Specialties, Ltd., has been incorporated with $50,000 capital to manufacture furniture, wood products, etc., by John F. Forman, Ernest Lindelius, Stephen J. LeHuray and others.

MONTREAL, QUE.—The Eastern Engineering Co., Ltd., has been incorporated to manufacture engines, machinery, etc., with $500,000 capital stock by Colville Sinclair, Ralph E. Allan and A. McMurray, all of Montreal.

MONTREAL, QUE.—The Curry Cormac Corp., Ltd., has ben incorporated with $75,000 capital stock to manufacture and deal in machinery, plant equipment, boilers, etc., by Aubrey H. Elder, Felix W. Hackett, Winchester H. Riggar and others.

MONTREAL, QUE.—The Palm Grip Rim Co., Ltd., has ben incorporated with $100,000 capital to manufacture automobile accessories, wheels, rims, etc., by Arthur R. W. Plimsoll, Michael T. Burke, Edmund H. Riley and others.

New Trade Publications

BABBITT METAL—The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is circulating a folder in which the properties, applications, etc., of babbitt metal are described.

CONDUIT BODIES—The Sprague Electric Works of the General Electric Co., Schenectady, N. Y., is circulating two small folders. One is devoted to descriptions of conduit bodies and the other to information on conduit.

PUMPS—The Dean Bros. Steam Pump Works, Indianapolis, has published a 68-page illustrated booklet in which duplex, double acting pumps are described and illustrated. All speeds, capacities, fittings, etc., are tabulated in the booklet, and numerous illustrations of various sizes and types are given.

PUNCHING EQUIPMENT—C. R. & W. A. Nelson, Inc., Chicago, have published a 4-page illustrated bulletin in which heavy-duty punching equipment is described and illustrated. In addition to specifications, the bulletin gives details as to design, construction and efficiency of the machines. Their application to die cutting, perforating, round cornering, tab cutting, label cutting, embossing and other special punching work is described.

REFRACTORY MATERIAL—The Quigley Furnace Specialties Co., New York, is circulating a 20-page illustrated bulletin in which the use of a refractory material in power plants is described. This material, according to the bulletin, is a plastic refractory material compounded for bonding fire brick, etc. It can be used as a binder wherever fire clay brick, silica brick, tile or granular refractories are used.

BEARINGS—The process of babbitting motor bearings is described in detail in a circular recently published by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The production of babbitt metal is discussed by J. S. Dean, of the railway engineering department of the company. A number of illustrations of the equipment used in the manufacture of this metal are presented and the result of various tests of samples of alloys are given.

RECORDING INSTRUMENTS—The Uehling Instrument Co. Paterson, N. J., has published an 8-page booklet in which the power losses through heat escaping through the chimney are pointed out. According to the booklet, in ordinary practice, the heat loss ranges from 15 to 50 per cent of the heat contained in the fuel. Graphic illustrations show the importance of these losses as compared with other boiler losses. The booklet points out that only through the use of instruments and carefully kept records can the magnitude of these losses be found. The company is also circulating a second bulletin containing additional information on the subject of power losses.

Industrial Business Changes Recently Announced

ESTABLISHMENT of a factory branch office at 116 Broad street, New York, and continuance of the warehouse and service station at 108-126 Dobbin street, Brooklyn, has been announced by the Economy Baler Co., Ann Arbor, Mich. K. L. Porter is in charge. Offices formerly were maintained at 68 New Chambers, New York.

* * *

Lisbon, O., is the new address of the National Razor Mfg. Co., which formerly had been Fremont, O.

* * *

The Nashua Machine Co., Inc., Nashua, N. H., has changed its name to the Bundy Steam Trap Co.

* * *

Palmer Bros. Engines, Inc., Cos Cob, Conn., has opened a branch office at 122 South Ocean street, Jacksonville, Fla.

* * *

The Warren Tool & Forge Co., Warren, O., has purchased the American Block & Mfg. Co. and the General Malleable Co., both of Warren.

* * *

The Federal Supply Co., East Seventy-ninth street, Cleveland, has been appointed representative of the Quigley Furnace Specialties Co., Inc., 26 Cortlandt street, New York.

* * *

Chicago representation of the Pittsburgh Cold Rolled Steel Co., Verona, Pa., has been taken by the Lincoln Steel Co., 112-118 North May street, Chicago, in the sale of cold-rolled strip steel, flat wire, etc.

* * *

Outgrowing its original name through the addition of other products, the Acme Fancy Wire Works, Detroit, after 22 years, has changed its title to the Acme Wire & Iron Works. No change has been made in policy or personnel.

* * *

A new office has been opened at 1011 Majestic building, Milwaukee, by the Armstrong Cork & Insulation Co., Pittsburgh, with Hugh Krampe in charge. It will serve eastern Wisconsin and the upper peninsula of Michigan. The Denver office has been re-established at 1875 Gaylor street under Alex Callow.

Iron and Steel Production

Compiled By THE IRON TRADE REVIEW

Pig Iron

	Stacks–No.	Stacks–In	Output–Total	Output–Av. daily
1907				
January	376	311	2,174,801	69,509
February	374	308	2,047,036	73,109
March	377	304	2,186,709	70,539
April	378	327	2,226,708	74,223
May	391	329	2,291,030	73,904
June	392	341	2,237,420	74,580
July	396	335	2,253,243	72,685
August	397	329	2,243,656	72,376
September	399	329	2,174,148	72,471
October	401	314	2,359,690	76,119
November	398	226	1,820,558	60,685
December	398	154	1,234,733	39,830
Total			25,299,732	
1908				
January	398	139	1,081,813	34,316
February	401	150	1,086,809	37,476
March	398	154	1,229,856	39,672
April	398	146	1,155,122	38,504
May	396	145	1,168,002	37,677
June	395	154	1,106,300	36,876
July	397	166	1,228,604	39,632
August	399	181	1,366,019	44,065
September	399	189	1,416,252	47,208
October	400	200	1,573,824	50,764
November	402	212	1,582,314	52,744
December	403	221	1,723,664	55,602
Total			15,680,140	
1909				
January	406	234	1,787,473	57,683
February	407	233	1,682,470	60,088
March	406	229	1,822,024	58,793
April	406	224	1,731,406	57,687
May	407	236	1,866,757	60,218
June	408	240	1,929,929	64,334
July	409	258	2,088,620	67,375
August	412	278	2,232,642	72,021
September	413	297	2,378,655	79,186
October	413	309	2,589,681	84,001
November	414	311	2,532,740	84,425
December	416	314	2,682,702	86,539
Total			25,337,002	
1910				
January	416	311	2,599,995	83,871
February	417	311	2,429,525	86,747
March	417	310	2,588,736	83,580
April	418	291	2,477,700	82,590
May	421	206	1,871,388	60,367
June	420	271	2,288,279	76,276
July	420	254	2,158,124	69,617
August	422	244	2,103,793	67,864
September	420	234	2,048,461	68,282
October	421	230	2,086,205	67,297
November	421	218	1,910,385	63,679
December	421	193	1,779,899	57,192
Total			26,840,314	
1911				
January	421	210	1,766,658	56,985
February	421	226	1,781,285	63,617
March	421	236	2,165,764	69,867
April	421	220	2,044,904	68,163
May	421	206	1,871,388	60,367
June	421	202	1,773,282	59,109
July	423	196	1,776,108	57,294
August	423	206	1,921,832	61,995
September	423	216	1,973,918	65,797
October	421	214	2,092,061	67,486
November	421	214	1,999,100	66,637
December	422	215	2,032,301	65,558
Total			23,198,601	
1912				
January	421	227	2,052,806	66,220
February	422	235	2,098,796	72,372
March	420	237	2,411,529	77,791
April	421	239	2,377,621	79,254
May	423	243	2,503,341	80,753
June	424	242	2,433,737	81,125
July	422	245	2,402,567	77,502
August	423	255	2,500,163	80,650
September	419	262	2,444,454	81,482
October	422	280	2,683,645	86,569
November	423	289	2,639,562	87,985
December	423	291	2,777,292	89,590
Total			29,325,513	
1913				
January	423	297	2,287,800	89,929
February	423	306	2,778,670	92,095
March	423	278	2,562,823	89,123
April	421	297	2,754,353	91,812
May	421	285	2,716,825	90,865
June	422	283	2,816,883	87,229
July	422	264	2,658,275	82,525
August	424	260	2,537,918	81,839
September	425	258	2,594,098	83,137
October	425	244	2,439,924	81,933
November	424	225	2,529,960	74,322
December	424	191	1,976,138	63,746
Total			30,652,767	
1914				
January	423	199	1,879,336	60,624
February	423	219	1,888,607	67,450
March	423	232	2,341,551	75,534
April	422	212	2,261,501	75,383
May	422	198	2,097,019	67,646
June	422	193	1,904,566	63,486
July	422	187	1,955,324	63,075
August	422	187	1,996,483	64,403
September	422	180	1,882,718	62,757
October	422	162	1,767,227	57,007
November	421	150	1,501,269	50,042
December	421	154	1,495,325	48,236
Total			22,970,926	
1915				
January	421	165	1,591,324	51,323
February	421	179	1,666,592	59,521
March	421	190	2,046,280	66,009
April	421	197	2,114,516	70,484
May	421	207	2,255,157	72,747
June	421	221	2,369,932	78,998
July	421	234	2,563,311	82,687
August	421	246	2,774,825	89,510
September	420	266	2,834,342	94,478
October	420	276	3,120,340	100,656
November	421	285	3,035,235	101,174
December	421	295	3,201,605	103,278
Total			29,573,161	
1916				
January	421	304	3,171,878	102,319
February	421	312	3,078,548	106,157
March	422	315	3,327,630	107,343
April	422	320	3,225,496	107,517
May	423	321	3,364,584	108,535
June	423	325	3,213,818	107,127
July	419	316	3,221,127	103,907
August	419	317	3,197,838	103,156
September	419	326	3,208,041	106,935
October	419	328	3,508,180	113,167
November	420	322	3,317,805	110,593
December	422	309	3,184,178	102,715
Total			39,019,123	
1917				
January	422	310	3,159,839	101,930
February	422	317	2,649,935	94,641
March	423	331	3,255,813	105,026
April	425	333	3,328,061	110,936
May	425	340	3,413,677	110,119
June	427	347	3,260,234	108,675
July	429	351	3,337,442	107,659
August	431	355	3,238,970	104,483
September	431	344	3,140,742	104,691
October	433	354	3,296,286	106,332
November	434	344	3,198,597	106,620
December	435	321	2,885,380	93,077
Total			38,164,976	
1918				
January	435	294	2,403,227	77,523
February	435	319	2,318,242	82,794
March	438	338	3,209,996	103,548
April	437	351	3,273,355	109,112
May	437	360	3,451,884	111,351
June	437	353	3,316,148	110,538
July	437	364	3,408,584	109,954
August	439	371	3,378,479	108,983
September	438	364	3,413,223	113,774
October	437	364	3,482,392	112,335
November	437	360	3,347,844	111,595
December	435	351	3,434,114	110,602
Total			38,437,488	
1919				
January	435	330	3,306,279	106,654
February	435	311	2,943,347	105,270
March	435	279	3,088,023	99,614
April	435	216	2,474,374	82,479
May	433	197	2,107,729	67,991
June	433	199	2,114,028	70,467
July	434	240	2,424,212	78,200
August	432	266	2,742,081	88,453
September	433	163	2,480,790	82,692
October	432	216	1,864,424	60,142
November	432	252	2,407,369	80,244
December	432	262	2,626,074	84,711
Total			30,578,730	
1920				
January	432	285	3,012,373	97,172
February	432	305	2,984,257	102,904
March	433	315	3,375,768	108,895
April	433	278	2,752,670	91,754
May	433	297	2,991,825	96,510
June	433	302	3,046,623	101,553
July	434	291	3,043,918	98,190
August	434	306	3,145,536	101,168
September	434	317	3,124,308	104,173
October	435	290	3,288,341	106,075
November	435	255	2,935,081	97,836
December	435	202	2,700,268	87,105
Total			36,400,968	
1921				
January	436	184	2,414,753	77,895
February	436	155	1,927,088	68,906
March	436	103	1,593,542	51,447
April	436	96	1,190,751	39,691
May	436	90	1,215,272	39,202
June	436	74	1,064,007	35,466
July	435	69	864,642	27,892
August	435	69	954,901	30,802
September	435	84	985,795	32,857
October	435	95	1,234,450	39,821
November	429	120	1,414,958	47,165
December	429	124	1,642,775	52,992
Total			16,506,564	

Lake Ore Shipments

Gross Tons, Rail and Water

1921 (all-rail estimated)	22,725,726
1920	60,411,572
1919	48,546,651
1918	62,836,172
1917	64,437,003
1916	66,658,466
1915	47,272,751
1914	32,729,726
1913	49,947,116
1912	48,221,546
1911	32,793,130
1910	43,435,171

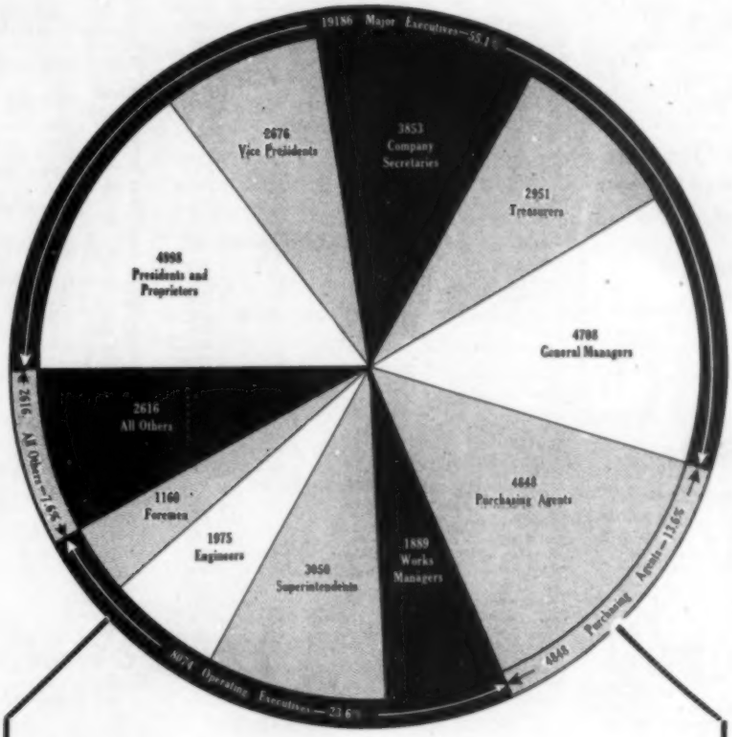
Ingots and Castings

By American Iron and Steel Institute

	Ingots	Castings	Total
1910	25,154,087	940,832	26,094,919
1911	23,029,479	646,627	23,676,106
1912	30,284,682	966,621	31,251,303
1913	30,280,130	1,020,744	31,300,874
1914	22,819,784	693,246	23,513,030
1915	31,284,212	866,824	32,151,036
1916	41,401,917	1,371,763	42,773,680
1917	43,619,200	1,441,407	45,060,607
1918	43,051,022	1,411,410	44,462,432
1919	33,694,795	976,437	34,671,232
1920	40,881,392	1,251,542	42,132,934

Monthly Ingot Output

	Gross Tons 84.2 per cent of capacity	Indicated total
January	2,203,186	2,620,000
February	1,749,477	2,080,000
March	1,570,978	1,860,000
April	1,213,958	1,440,000
May	1,265,850	1,500,000
June	1,003,406	1,190,000
July	803,376	955,000
August	1,138,071	1,350,000
September	1,174,740	1,400,000
October	1,616,810	1,900,000
November	1,669,001	1,970,000
December	1,427,093	1,680,000
Total	16,826,946	19,945,000



THE IRON TRADE REVIEW is read by men with authority to buy. The chart above tells the story. Over 92 per cent of the readers of THE IRON TRADE REVIEW are executives. Your advertisement reaches the man whose decision *goes*—32,108 of him—an average of nearly three readers to every copy of the paper.

THE IRON TRADE REVIEW

A Penton Publication

Cleveland, U. S. A.

A.B.C. *A.B.P.*

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron	$6.45
Mesabi Bessemer, 55 per cent iron	6.20
Old Range nonbessemer, 51½ per cent iron	5.70
Mesabi nonbessemer, 51½ per cent iron	5.55

PORT HENRY IRON ORE
Per Gross Ton, F.o.b., Port Henry

Old bed 21 furnace	$4.85
Old bed concentrates, 63 per cent	5.75
Harmony, cobbed, 63 per cent	5.75
New bed, low phos., 65 per cent	8.50
Lump ore for fix	6.00

Manganese Ore

Brazilian, 48 to 50 per cent c.i.f. Atlantic ports, 22 cents per unit.

Indian 48 to 50 per cent c.i.f. Atlantic ports, 22 cents per unit.

Fluor Spar

Washed gravel Kentucky and Illinois mines, per ton $15.00 to 20.00

Rivets

Structural rivets	2.25c
Boiler rivets, Pittsburgh	2.35c
Rivets ⅞-in. and smaller, Pittsburgh	70-10 and 10 off

Nuts and Bolts

NUTS
(Up to 1¼ and 1½ inches inclusive)

Hot pressed, square blank	$5.50 off
Hot pressed, square tapped	5.00 off
Hot pressed, hexagon blank	5.50 off
Hot pressed, hexagon tapped	5.00 off
Cold pressed, square tapped	5.00 off
Cold pressed, square blank	5.25 off
Cold pressed, hexagon tapped	5.00 off
Cold pressed, hexagon blank	5.25 off
Cold pressed semifinished hexagon nuts ⅝-in. and larger	70-10-10 off
Cold pressed semifinished hexagon nuts ½-inch and smaller	70-10-10-10 off
Case hardened, finished, hexagon	75-7½ off

Price f.o.f. Pittsburgh, Packages of 50.

CARRIAGE BOLTS
⅜ x 6 inches, smaller and shorter

Rolled thread	65-10-10 off
Cut thread	65-10 to 70 off
Larger and longer	65-10 to 70 off

MACHINE BOLTS
(⅜ x 4 inches, hot pressed nuts)

Rolled thread	70-10-5 to 70-10-7½ off
Cut thread	70-5 to 70-10 off
Larger and longer	65-10-5 to 70-10 off

(⅜ x 4 inches, cold punched nuts)

Cut thread	65-5 off
Larger and longer	65 off
Lag screws	70-10 to 70-10-5 off
Plow bolts Nos. 1, 2 and 3 heads	60-10 off

Warehouse Prices

STEEL BARS

Boston	2.555c
Buffalo	2.80c
Chicago	2.53c
Cincinnati	2.65c to 2.90c
Cleveland	2.36c
Detroit	2.58c
New York	2.53c
Philadelphia	2.50c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.775c
St. Paul	3.06c
Los Angeles	3.50c

IRON BARS

Boston	2.555c
Buffalo	2.80c
Chicago	2.53c
Cincinnati	2.65c to 2.90c
Detroit	2.73c
New York	2.53c
Philadelphia	2.50c
St. Louis	2.775c

SHAPES

Boston	2.655c
Buffalo	2.90c
Chicago	2.63c
Cincinnati	2.75c to 3.00c
Cleveland	2.46c
Detroit	2.68c
New York	2.63c
Philadelphia	2.50c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.775c
St. Paul	3.06c
Los Angeles	3.60c

PLATES

Boston	2.655c
Buffalo	2.90c
Chicago	2.63c
Cincinnati	2.75c to 3.00c
Cleveland	2.46c
Detroit	2.68c
New York	2.63c
Philadelphia	2.50c
San Francisco	3.25c
Seattle	3.50c
St. Louis	2.775c
St. Paul	3.06c
Los Angeles	4.25c

NO. 10 BLUE ANNEALED SHEETS

Boston	3.48c
Buffalo	3.55c
Chicago	3.38c
Cincinnati	3.35c to 3.60c
Cleveland	3.10c
Detroit	3.38c
New York	3.28c
Philadelphia	3.25c
San Francisco	4.10c
Seattle	4.50c
St. Louis	3.475c
St. Paul	3.66c
Los Angeles	5.25c

NO. 28 BLACK SHEETS

Boston	4.50c
Buffalo	4.25c
Chicago	4.15c
Cincinnati	4.50c to 4.75c
Cleveland	4.00c
Detroit	4.15c
New York	4.00c
Philadelphia	3.75c
San Francisco	5.60c
Seattle	5.70c
St. Louis	4.15c
St. Paul	4.43c
Los Angeles	6.00c

NO. 28 GALVANIZED SHEETS

Boston	5.50c
Buffalo	5.25c
Chicago	5.15c
Cincinnati	4.50c to 4.75c
Cleveland	4.75c
Detroit	5.15c
New York	.00c
Philadelphia	4.75c
San Francisco	6.45c
Seattle	6.70c
St. Louis	5.15c
Los Angeles	6.75c

BANDS

Boston	3.15c
Buffalo	3.50c
Chicago	3.13c
Cincinnati	3.25c to 3.50c
Cleveland	2.96c
Detroit	3.18c
New York	2.13c
Philadelphia	3.10c
San Francisco	3.90c
Seattle	4.00c
Los Angeles	4.35c

HOOPS

Boston	3.315c
Buffalo	3.50c
Cleveland	2.96c
Detroit	3.18c
New York	3.38c
Philadelphia	3.25c
Seattle	4.50c

COLD ROLLED SHAFTING

Boston (round)	3.55c
Buffalo	4.05c
Chicago	3.40c to 3.90c
Cincinnati (round)	3.60c to 3.70c
Detroit	3.50c
New York	3.45c
New York (flats, squares and hexagons)	3.95c
Philadelphia	3.25c
San Francisco	4.65c
Seattle	5.00c
Los Angeles	5.35c
Boston, flats, squares and hexagons	4.05c

Steel Pipe

Pittsburgh basing discounts, jobbers' carloads

STANDARD WEIGHT
Butt Weld

	Black	Galvanized
⅛-inch	54½	28
¼ and ⅜-inch	60	33½
½-inch	65	50½
¾-inch	69	56½
1 to 3-inch	71	58½
Lap Weld		
2-inch	64	51½
2½ to 6-inch	68	55½
7 to 8-inch	65	51½
9 to 12-inch	64	50½

REAMED AND DRIFTED
Butt Weld

1 to 3-inch	69	56½
Lap Weld		
2-inch	62	49½
2½ to 6-inch	66	53½

EXTRA STRONG—PLAIN ENDS
Butt Weld

⅛-inch	50½	33
¼ and ⅜-inch	56	38½
½-inch	62	50½
¾-inch	67	55½
1 to 1½-inch	69	57½
2 to 3-inch	70	58½
Lap Weld		
2-inch	62	50½
2½ to 4-inch	66	54½
4½ to 6-inch	65	53½
7 to 8-inch	61	47½
9 to 12-inch	55	41½

DOUBLE EXTRA STRONG—PLAIN ENDS
Butt Weld

½-inch	51	40½
¾ to 1½-inch	54	43½
2 to 2½-inch	56	45½
Lap Weld		
2-inch	50	40½
2½ to 4-inch	52	42½
4½ to 6-inch	51	41½
7 to 8-inch	47	33½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers, carloads

THREADS AND COUPLINGS
Butt Weld

	Black	Galvanized
¼ and ⅜-inch	3½	+22½
½-inch	36½	18½
¾-inch	42½	27½
1 to 1½-inch	44½	29½
Lap Weld		
2-inch	39½	25½
2½ to 6-inch	42½	29½
7 to 12-inch	40½	27½

PLUGGED AND REAMED
Two points less than above

EXTRA STRONG, PLAIN ENDS
Butt Weld

¼ and ⅜-inch	+ 4½	+37½
½-inch	35½	23½
¾-inch	42½	28½
1 to 1½-inch	44½	30½
Lap Weld		
2-inch	40½	27½
2½ to 4-inch	43½	31½
4½ to 6-inch	42½	30½
7 to 8-inch	35½	23½
9 to 12-inch	30½	18½

DOUBLE EXTRA STRONG, PLAIN ENDS
Butt Weld

½-inch	+27	+39
¾-inch	+ 7½	+19½
1-inch	+23½	+35½
1¼-inch	+ 7½	+19½
1½-inch	+ 6½	+18½
Lap Weld		
2 and 2½-inch	7½	14½
3 to 4-inch	12½	3½
4½ to 6-inch	11½	2½
8-inch	8½	

Boiler Tubes

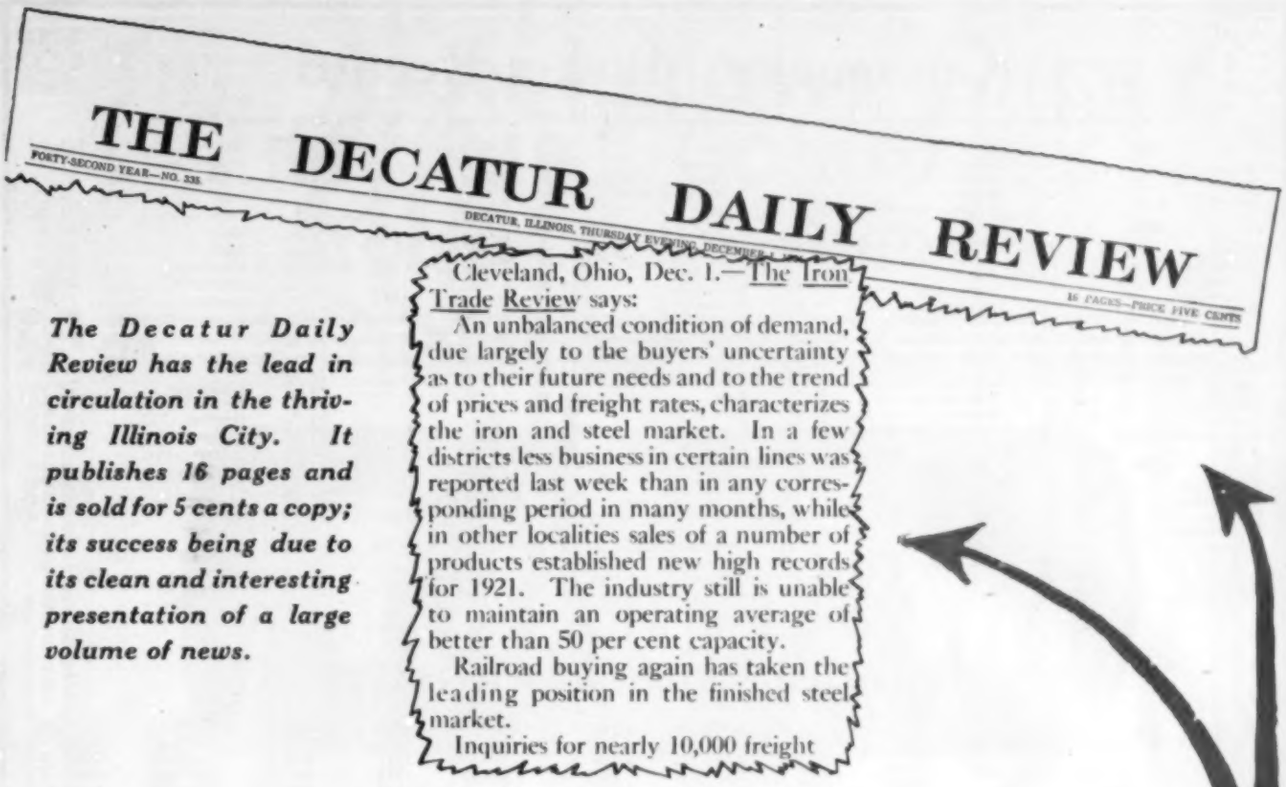
L. C. L. discounts. C. L. discounts take 4-Point differential

STEEL

1¾-inch	22½
2 and 2¼-inch	37
2½ to 3-inch	48
3¼ to 4-inch	53

IRON

1½-inch	1
1¾-inch	11
2 and 2¼-inch	21
2½ to 3-inch	26
3¼ to 4½-inch	28


THE DECATUR DAILY REVIEW

FORTY-SECOND YEAR—NO. 335 DECATUR, ILLINOIS, THURSDAY EVENING, DECEMBER 1 16 PAGES—PRICE FIVE CENTS

The Decatur Daily Review has the lead in circulation in the thriving Illinois City. It publishes 16 pages and is sold for 5 cents a copy; its success being due to its clean and interesting presentation of a large volume of news.

Cleveland, Ohio, Dec. 1.—The Iron Trade Review says:

An unbalanced condition of demand, due largely to the buyers' uncertainty as to their future needs and to the trend of prices and freight rates, characterizes the iron and steel market. In a few districts less business in certain lines was reported last week than in any corresponding period in many months, while in other localities sales of a number of products established new high records for 1921. The industry still is unable to maintain an operating average of better than 50 per cent capacity.

Railroad buying again has taken the leading position in the finished steel market.

Inquiries for nearly 10,000 freight

400 Newspapers Regularly Quote

THE IRON TRADE REVIEW

CLEVELAND

The international reputation and the World-wide circulation of THE IRON TRADE REVIEW is the result of year after year of unfailing Editorial accuracy and reliability.

PROOF—

THE IRON TRADE REVIEW

"The Most Widely Quoted Trade Paper In The World"

Composite Market Record

Monthly Averages of Fourteen Iron and Steel Products, 1913-1921, Compiled by The Iron Trade Review

1922	
January 18	$33.36
January 11	33.54
January 4	33.64
1921	
December	33.99
November	34.71
October	35.46
September	35.34
August	35.99
July	38.14
June	41.87
May	43.32
April	43.84
March	45.37
February	48.81
January	51.98
Average for year	40.74
1920	
December	54.04
November	63.75
October	68.61
September	68.86
August	68.87
July	68.69
June	68.29
May	68.66
April	$67.49
March	65.47
February	65.63
January	59.40
Average for year	65.65
1919	
December	55.20
November	52.37
October	49.16
September	48.75
August	48.67
July	48.26
June	48.28
May	48.69
April	48.85
March	52.68
February	53.71
January	53.81
Average for year	50.70
1918	
December	57.24
November	55.67
October	57.53
September	56.56
August	56.67
July	56.66
June	56.62
May	56.59
April	56.59
March	$56.71
February	56.67
January	56.67
Average for year	56.68
1917	
December	56.68
November	58.29
October	67.75
September	83.18
August	89.69
July	89.56
June	92.66
May	73.96
April	66.48
March	61.07
February	56.76
January	55.10
Average for year	70.10
1916	
December	53.68
November	46.77
October	41.50
September	39.97
August	$39.67
July	39.37
June	39.63
May	39.78
April	39.13
March	37.18
February	35.63
January	33.66
Average for year	40.50
1915	
December	31.56
November	28.64
October	26.19
September	25.55
August	24.77
July	24.25
June	23.74
May	22.89
April	22.66
March	22.71
February	22.21
January	21.90
Average for year	24.76
1914	
December	21.58
November	23.39
October	$22.84
September	23.17
August	22.72
July	22.17
June	22.58
May	22.99
April	23.39
March	23.60
February	23.52
January	23.03
Average for year	22.92
1913	
December	23.29
November	24.02
October	24.91
September	25.55
August	25.97
July	26.34
June	26.78
May	27.34
April	27.74
March	27.93
February	28.05
January	27.96
Average for year	26.32

Iron and Steel Statistics

Tin Plate Production

Year	Tin plate Tons	Terne plate Tons	Total Tons
1908	524,448	77,090	601,538
1909	589,929	95,465	685,394
1910	725,411	84,092	809,503
1911	798,814	79,221	878,035
1912	982,830	95,698	1,078,528
1913	854,093	68,472	922,565
1914	969,892	73,098	1,042,990
1915	1,100,913	81,735	1,182,648
1916	1,276,113	107,088	1,383,201
1917	1,616,658	76,946	1,693,604
1918	1,608,124	42,689	1,650,813
1919	1,203,579	85,427	1,289,006
1920	1,539,977	69,112	1,609,089

Sheet Production

Year	Tons
1913	1,921,001
1914	1,668,644
1915	2,106,298
1916	2,492,794
1917	2,595,606
1918	2,176,537
1919	2,316,057
1920	3,133,217

Plate Production

Year	Sheared Tons	Universal Tons	Total Tons
1913	1,844,354	1,158,416	3,002,770
1914	1,346,308	766,133	2,112,441
1915	1,923,199	954,852	2,878,051
1916	2,453,150	1,224,234	3,677,384
1917	2,963,039	1,195,199	4,158,238
1918	3,885,126	1,234,782	5,119,908
1919	2,899,967	992,054	3,892,021
1920	3,505,364	1,249,769	4,755,133

Shape Production

Year	Gross tons
1908	1,083,181
1909	2,275,562
1910	2,266,890
1911	1,912,367
1912	2,846,487
1913	3,004,972
1914	2,031,124
1915	2,437,003
1916	3,029,964
1917	3,110,000
1918	2,849,969
1919	2,614,036
1920	3,306,748

Bar Production

Year	Gross Tons Iron Tons	Steel Tons	Total Tons
1908	685,233	1,301,405	1,986,638
1909	952,230	2,311,301	3,263,531
1910	1,074,163	2,711,568	3,785,731
1911	835,625	2,211,737	3,047,362
1912	944,790	2,752,324	3,697,114
1913	1,026,632	2,930,977	3,957,609
1914	563,171	1,960,460	2,523,631
1915	657,107	3,474,135	4,131,242
1916	993,948	5,236,354	6,230,302
1917	983,926	5,226,031	6,209,957
1918	846,898	5,395,851	6,242,749
1919	446,549	3,945,075	4,391,624
1920	663,032	5,467,208	6,130,240

Tube Production

	Iron	Steel	Total
1913	276,067	1,969,465	2,245,532
1914	212,147	1,525,557	1,737,704
1915	206,513	1,713,161	1,919,674
1916	278,117	2,372,941	2,651,058
1917	273,890	2,213,087	2,486,977
1918	202,958	2,087,521	2,290,479
1919	162,356	2,212,575	2,374,931
1920	199,673	2,803,052	3,002,725

Steel Rail Production

Year	Tons
1908	1,920,944
1909	3,023,845
1910	3,635,801
1911	2,822,556
1912	3,327,915
1913	3,502,780
1914	1,945,095
1915	2,204,203
1916	2,854,518
1917	2,944,161
1918	2,540,892
919	2,203,843
920	2,604,116

Freight Rates

Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.96
Newark, N. J.	6.72
Boston	7.28
Philadelphia	6.32
Pittsburgh	1.96
Chicago	5.32
St. Louis	6.44
Minneapolis, St. Paul	7.60
Buffalo to:	
Albany, N. Y.	$2.52
New England (rail)	5.46
New York and Brooklyn (rail)	5.46
Virginia furnaces to:	
Philadelphia	$5.74
New England	6.58
Brooklyn, Jersey City, Newark	6.16
Birmingham, Ala., to:	
Boston	$10.665
Boston (rail and water)	7.65
Cincinnati	4.50
Chicago	6.66
Cleveland	6.66
Louisville, Ky.	4.12
Minneapolis, St. Paul	9.73
New York	10.265
Philadelphia	8.665
Pittsburgh	7.60
Savannah, Ga.	4.25
St. Louis	5.725
Chicago to:	
Des Moines	$4.725
Minneapolis, St. Paul	3.375
Milwaukee	0.89
Moline, Ill.	1.89
Omaha	6.07
St. Louis	2.725
Ironton and Jackson, O., to:	
Chicago	$5.32
Cincinnati	2.52
Cleveland	3.36
Detroit	3.64
Indianapolis	3.22
Minneapolis, St. Paul	8.40

Finished Material

Pittsburgh, carloads, per 100 pounds, to:	
New York	$0.38
Philadelphia	0.35
Boston	0.415
Buffalo	0.305
Baltimore	0.335
Cleveland	0.24
Cincinnati	0.32
Chicago	0.38
Detroit	0.32
Minneapolis and St. Paul	0.66
Denver	1.32
St. Louis	0.475
New Orleans	0.515
Birmingham	0.765
Pacific coast (all rail)	1.665
Pacific coast (tin plate)	1.665

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN, OHIO.

For the installation of Heating and Plumbing systems no material at equal cost approaches

YOUNGSTOWN PIPE

in durability, ease of working and resultant economy.

It is made of the best steel possible to produce, finished and threaded with scrupulous care, and tested by hydrostatic pressure far beyond all possible strains.

No better pipe is or can be made in commercial quantities.

The Youngstown Sheet & Tube Company

Youngstown, Ohio

DISTRICT SALES OFFICES

BOSTON—120 Franklin St.
NEW YORK—30 Church St.
PHILADELPHIA—Pennsylvania Bldg.
ATLANTA—Healey Bldg.
PITTSBURGH—Oliver Bldg.
CLEVELAND—Leader-News Bldg.
DETROIT—Dime Savings Bank Bldg.
CHICAGO—McCormick Bldg.
ST. LOUIS—1139 Olive St
DENVER—First National Bank Bldg.
DALLAS—Dallas Co., State Bank Bldg.
SAN FRANCISCO—604 Mission St.
SEATTLE—Central Bldg.

EXPORT SALES AGENT

Consolidated Steel Corporation, 25 Broadway, New York City

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$11.50 to 12.00
Boston (dealers)	8.00 to 9.00
Buffalo	**13.50**
Chicago	11.25 to 11.75
Cincinnati	9.50 to 10.00
Cleveland	**11.50 to 11.75**
Detroit (dealers)	8.00 to 8.50
Eastern Pennsylvania	11.50
New York (dealers)	7.50 to 8.00
Pittsburgh	14.50 to 15.00
San Francisco	**9.00 to 10.00**
St. Louis	11.50 to 12.00
Valleys	14.00 to 14.25

BUNDLED SHEETS

Buffalo	**$7.00 to 7.50**
Cleveland (hydraulic)	**8.75 to 9.00**
Cincinnati	4.00 to 4.50
Eastern Pennsylvania	9.50 to 10.00
Pittsburgh	10.25 to 10.75
St. Louis	4.25 to 4.75

STEEL RAILS, SHORT

Birmingham	$12.00 to 13.00
Boston (dealers)	**9.00 to 10.00**
Chicago	13.00 to 13.50
Cincinnati	11.50 to 12.00
Cleveland	**11.00 to 11.25**
St. Louis	12.50 to 13.00

STOVE PLATE

Birmingham	$13.00 to 13.50
Boston	**11.50 to 12.00**
Buffalo	15.00 to 16.00
Chicago	**14.00 to 14.50**
Cincinnati (net)	9.00 to 9.50
Cleveland	**13.00 to 13.25**
Detroit	10.00 to 11.00
Eastern Pennsylvania	14.00 to 14.50
New York	9.50 to 10.00
Pittsburgh	12.50 to 13.00
St. Louis	12.50 to 13.00

LOW PHOSPHORUS

Buffalo	$17.00
Cincinnati	16.00 to 17.00
Eastern Pennsylvania	16.50 to 17.00
Pitts. billet and bloom crops	**17.50 to 18.00**

SHOVELING STEEL

Chicago	$11.00 to 11.25
Pittsburgh	10.50 to 11.00
St. Louis	10.50 to 11.00

KNUCKLES, COUPLERS & SPRINGS

Chicago	$13.00 to 13.50
Eastern Pennsylvania	**15.00 to 16.00**
Pittsburgh	15.50 to 16.00
St. Louis	12.50 to 13.00

COMPRESSED SHEETS

Buffalo	$11.00 to 12.00
Chicago	7.50 to 8.00
Pittsburgh	11.50 to 12.00

FROGS, SWITCHES, GUARDS

Chicago	$11.25 to 11.75
Eastern Pennsylvania	11.50 to 12.00
St. Louis	11.00 to 11.50

BOILER PLATE, CUT

Detroit (dealers)	$6.00
St. Louis (dealers)	6.50 to 7.00

ANGLE BARS—STEEL

Chicago	$11.50 to 12.00
St. Louis	9.50 to 10.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham, No. 1	$11.50 to 12.50
Boston (dealers)	**12.00 to 13.00**
Buffalo	15.00 to 16.00
Chicago, No. 1	11.75 to 12.25
Chicago, No. 2	11.25 to 11.75
Cincinnati, No. 1	9.50 to 10.00
Cleveland, No. 1	**12.00 to 12.25**
Eastern Pennsylvani , No. 1	15.00 to 16.00
New York, No. 1 (dealers)	**11.50 to 12.00**
Pittsburgh, No. 1	12.00 to 12.50
Pittsburgh, No. 2	14.50 to 15.00
St. Louis, No. 1	11.75 to 12.25
St. Louis, No. 2	11.00 to 11.50

WROUGHT PIPE

Boston (dealers)	$7.00 to 7.50
Buffalo	**9.50 to 10.50**
Eastern Pennsylvania	11.75 to 12.25
New York (dealers)	7.00 to 7.50

YARD WROUGHT

Boston	**$8.00 to 9.00**
Eastern Pennsylvania, No. 1	13.00 to 13.50

CITY WROUGHT

New York, long	$10.50 to 11.00

BUSHELING

Buffalo, No. 1	$11.00 to 12.00
Chicago, No. 1	9.50 to 10.00
Chicago, No. 2	6.50 to 7.00
Cincinnati, No. 1	7.50 to 8.00
Cleveland, No. 1	**8.75 to 9.00**
Cleveland, No. 2	7.00 to 7.25
Eastern Pennsylvania, No. 1	11.50 to 12.50
Pittsburgh, No. 1	11.25 to 11.50
St. Louis, No. 1	10.50 to 11.00

MACHINE SHOP TURNINGS

Birmingham	$3.50 to 5.00
Boston (dealers)	3.50 to 4.00
Buffalo	8.00 to 9.00
Chicago	5.00 to 5.50
Cincinnati	3.50
Cleveland	8.00 to 8.25
Detroit (dealers)	4.00
Eastern Pennsylvania	**9.50 to 10.00**
New York (dealers)	4.50 to 5.00
Pittsburgh	9.25 to 9.75
St. Louis	5.00 to 5.50
Valleys	9.00 to 9.25

CAST IRON BORINGS

Birmingham (chemical)	13.40
Boston (chemical)	8.50 to 9.00
Boston (dealers)	7.00 to 7.50
Buffalo	**8.50 to 9.50**
Chicago	6.75 to 7.25
Cincinnati	4.00 to 4.50
Cleveland	8.00 to 8.50
Detroit (dealers)	6.00 to 6.25
Eastern Pennsylvania	12.00 to 12.50
Eastern Pennsylvania (chemical)	14.00
Pittsburgh	10.50 to 11.00
New York (dealers' price)	7.50 to 8.00
St. Louis	**7.00 to 7.50**
Valleys	10.75 to 11.00

MIXED BORINGS AND TURNINGS

(For blast furnace use)

Boston (dealers)	**$3.50 to 4.00**
Cleveland	8.75 to 9.00
Eastern Pennsylvania	9.50 to 10.00
New York (dealers)	4.50 to 5.00

IRON AXLES

Birmingham	$18.00 to 19.00
Buffalo	**26.00**
Chicago	22.00 to 22.50
Cincinnati	17.00 to 17.50
Cleveland	**19.00 to 20.00**
Detroit	19.00
Eastern Pennsylvania	**25.00 to 26.00**
New York (dealers)	20.00 to 21.50
Pittsburgh	**26.00 to 26.50**
St. Louis	21.00 to 21.50

IRON RAILS

Buffalo	$17.00 to 18.00
Chicago	16.00 to 16.50
Cincinnati	11.50 to 12.50
Cleveland	**13.50 to 14.00**

PIPES AND FLUES

Chicago	$7.00 to 7.50
Cincinnati	4.50 to 5.00
Cleveland	**9.00 to 9.50**
Detroit	5.00 to 6.00
St. Louis	8.00 to 8.50

RAILROAD GRATE BARS

Buffalo	$12.00 to 13.00
Chicago	12.00 to 12.50
Cleveland	13.00 to 13.25
Detroit	**8.00 to 9.00**
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	9.50 to 10.00
St. Louis	10.50 to 11.00

FORGE FLASHINGS

Boston (dealers)	**$4.50 to 5.00**
Chicago, small	7.50 to 8.00
Cleveland, small	**8.00 to 8.25**
Cleveland, large	**7.25 to 7.50**
Detroit (dealers)	5.00 to 5.50

FORGE SCRAP

Boston	**$4.50 to 5.00**
Chicago	11.25 to 11.75
Eastern Pennsylvania, No. 1	**10.00 to 10.50**

ARCH BARS AND TRANSOMS

Chicago	$17.50 to 18.00
St. Louis	16.50 to 17.00

ANGLE BARS—IRON

Chicago	$15.75 to 16.25
St. Louis	11.50 to 12.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	$4.75 to 5.25
Buffalo	11.00 to 12.00
Chicago	8.00 to 8.50
Cleveland	**9.00 to 9.50**
Detroit	7.00 to 7.50
Eastern Pennsylvania	**10.00 to 10.50**
Pittsburgh	11.50 to 12.00
St. Louis	6.50 to 7.00

STEEL CAR AXLES

Birmingham	$14.00 to 15.00
Boston (dealers)	12.00 to 12.50
Buffalo	**20.00 to 21.00**
Chicago	14.00 to 14.50
Cleveland	17.00 to 17.25
Eastern Pennsylvania	**17.00 to 18.00**
New York (dealers)	11.00 to 11.50
Pittsburgh	15.00 to 15.50
St. Louis	14.50 to 15.00

SHAFTING

Boston (dealers)	**$13.00 to 14.00**
Chicago	17.00 to 17.50
Eastern Pennsylvania	19.50 to 20.00
New York (dealers)	12.50 to 13.00
St. Louis	14.00 to 14.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	**$13.00 to 14.00**
Birmingham, tram car	12.50 to 13.00
Boston (consumers)	**15.00 to 16.00**
Buffalo, iron	15.50 to 16.50
Chicago, iron	14.50 to 15.00
Cincinnati	11.50 to 12.00
Cleveland, iron	13.00 to 13.50
Detroit	**11.50 to 12.00**
Eastern Pennsylvania, iron	**16.50 to 17.00**
New York, iron (dealers)	11.00 to 11.50
Pittsburgh, iron	14.50 to 15.00
Pittsburgh, steel	15.50 to 16.00
St. Louis, iron	14.50 to 15.00

NO. 1 CAST SCRAP

Birmingham, cupola	$16.00 to 16.50
Boston (consumers)	17.50 to 18.00
Buffalo	16.00 to 17.00
Chicago, cupola	14.00 to 14.50
Cincinnati, No. 1, machinery, cupola (net)	13.00 to 13.50
Cleveland, cupola	16.50 to 17.00
Eastern Pennsylvania, cupola	16.50 to 17.50
New York, cupola (dealers)	**13.50 to 14.00**
Pittsburgh, cupola	16.00 to 16.50
San Francisco	20.00 to 23.00
St. Louis, agricultural	15.00 to 15.00
St. Louis, railroad	15.00 to 15.50
Valleys	16.50 to 17.00

HEAVY CAST

Boston (consumers)	$17.00 to 17.50
Buffalo	14.00 to 14.50
Cleveland	**12.00 to 12.25**
Eastern Pennsylvania	15.00 to 16.00
New York (dealers)	13.00 to 13.50
Pittsburgh	14.00 to 14.50

MALLEABLE

Boston, railroad	**$12.50 to 13.00**
Buffalo	13.00 to 14.00
Chicago, railroad	12.50 to 13.00
Chicago, agricultural	12.50 to 13.00
Cincinnati, agricultural	8.50 to 9.00
Cincinnati, railroad	9.00 to 9.50
Cleveland, agricultural	**10.25 to 10.50**
Cleveland, railroad	12.25 to 12.50
Detroit	8.50 to 9.00
Eastern Pennsylvania, railroad	13.00 to 14.00
Pittsburgh, railroad	12.00 to 12.50
Pittsburgh, agricultural	**11.50 to 12.00**
St. Louis, agricultural	9.00 to 9.50
St. Louis, railroad	9.00 to 9.50

Miscellaneous Scrap

REROLLING RAILS

5 feet and over

Birmingham	$13.50 to 14.00
Boston (dealers)	10.50 to 10.75
Chicago	12.50 to 13.00
Cleveland	**15.00 to 16.00**
Detroit (dealers)	9.00 to 9.50
Eastern Pennsylvania	**16.00 to 16.50**
New York (dealers)	13.50 to 14.50
Pittsburgh district	15.50 to 16.00
St. Louis	11.75 to 12.25

LOCOMOTIVE TIRES

Chicago	$10.50 to 11.00
St. Louis	**9.50 to 10.00**

LOW PHOSPHORUS PUNCHINGS

Chicago	$11.50 to 12.00
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	**15.00 to 15.50**